VOL. 161 — NO. 5

JULY 29, 1961

# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Bell Labs engineers John West (left) and Leif Rongved study structure problems surrounded by models of communications satellites. Sphere at the bottom shows solar cell cover of protective man-made sapphires. See story, page 47.

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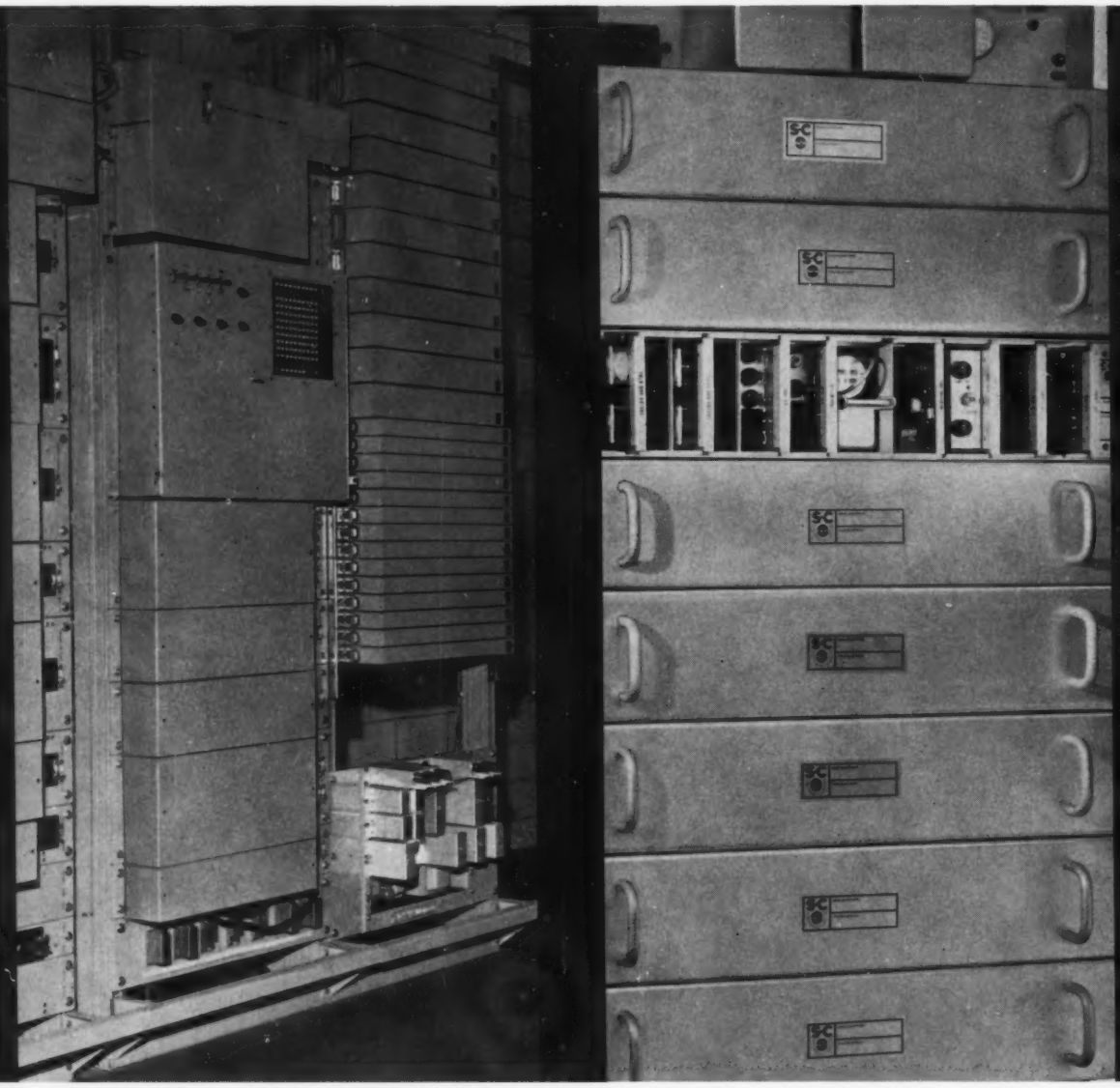

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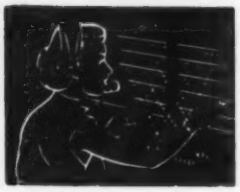

# FLASHES AND PLUGS

**MIDGET MERCHANDISER.** The enthusiasm telephone folks feel about their work can rub off on their families from grandmother to toddler. Mrs. R. C. Stearnes of Marion, O., wife of a General Telephone Co. of Ohio commercial department employe, recounts one such incident.

It seems that Mr. Stearnes had been working on some sales campaign ideas. Such a deep impression was made by daddy's work on his four-year-old daughter, Susan, that every time she saw an American flag, she sang these words to the tune of "America the Beautiful":

"O beautiful for stations gained

"For banner sales so high!"

•

**THEY'RE GASSIN' ABOUT THIS GASSER.** Ronald Francis, of the Hebron (Neb.) plant department of Lincoln Telephone & Telegraph Co., was sent out on a case of trouble near Davenport. He cleared it with little difficulty and headed home. Then, he ran into real trouble. His truck stopped.

He located a telephone, and called in his difficulties to the office. While he was getting towed in, he decided the trouble must have been in the fuel pump, and he so informed the mechanics.

They carefully repaired the supposed trouble—then discovered the truck had been out of gas!

•

**AUTHOR KNOWS COMMUNICATIONS.** In a recent issue, AT&T's *Short Hauls* readers were informed that we are a voluble race and, where telephone chatter is concerned, we are getting more so. Telephone traffic has become so congested that almost the only direction it can expand—especially on the overseas circuits—is up. This means satellites.

Nine years ago, a science-fiction author, J. J. Coupling, foresaw this trend, and asserted that "any communications engineer would give his eyeteeth to have the cheap and easy earth-moon path to span, rather than the tough coast-to-coast path."

If there were a base on the moon, he added, "transatlantic television would be a snap rather than an almost insuperable problem."

Author Coupling's nonfiction identity is Dr. John Robinson Pierce, director of communications principles, Bell Telephone Laboratories, and a principal originator of the "talking satellites."

According to the news, it appears that, without sacrificing a single eyetooth, Dr. Pierce and his fellow engineers have fashioned a sky link for telephone, telegraph and television, and, we are told, it should be even *more* practical than the moon path.

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# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

*1901 — 60 years — 1961*

**July 29, 1961**


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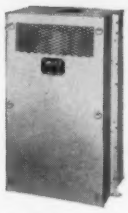

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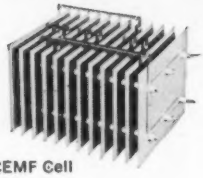

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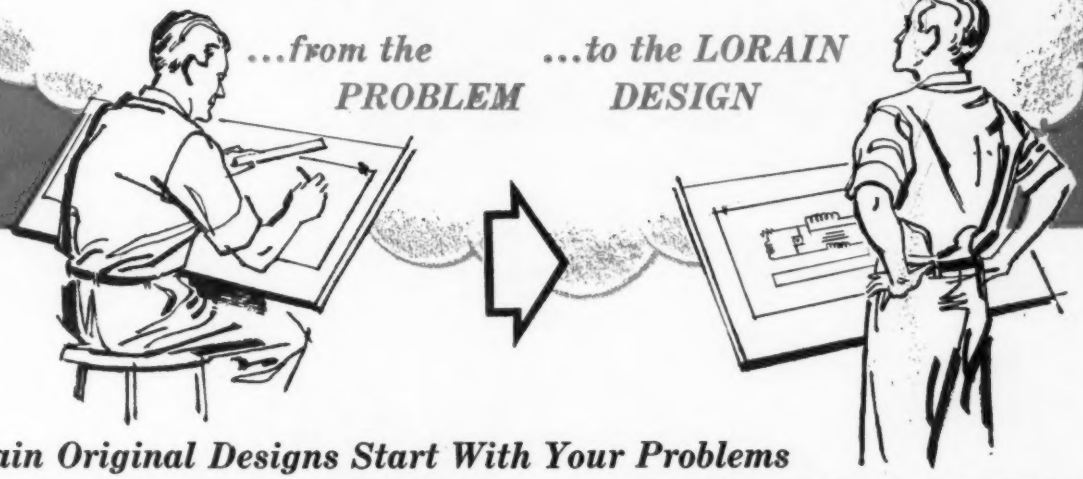

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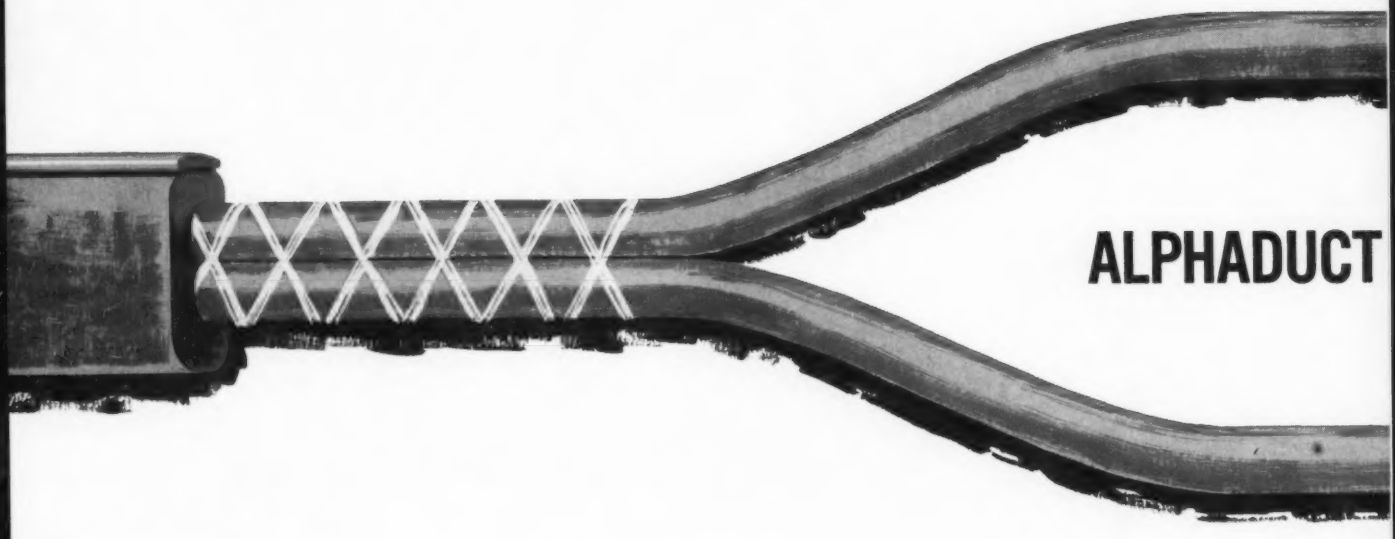

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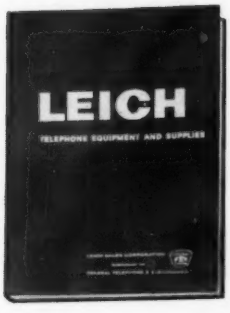


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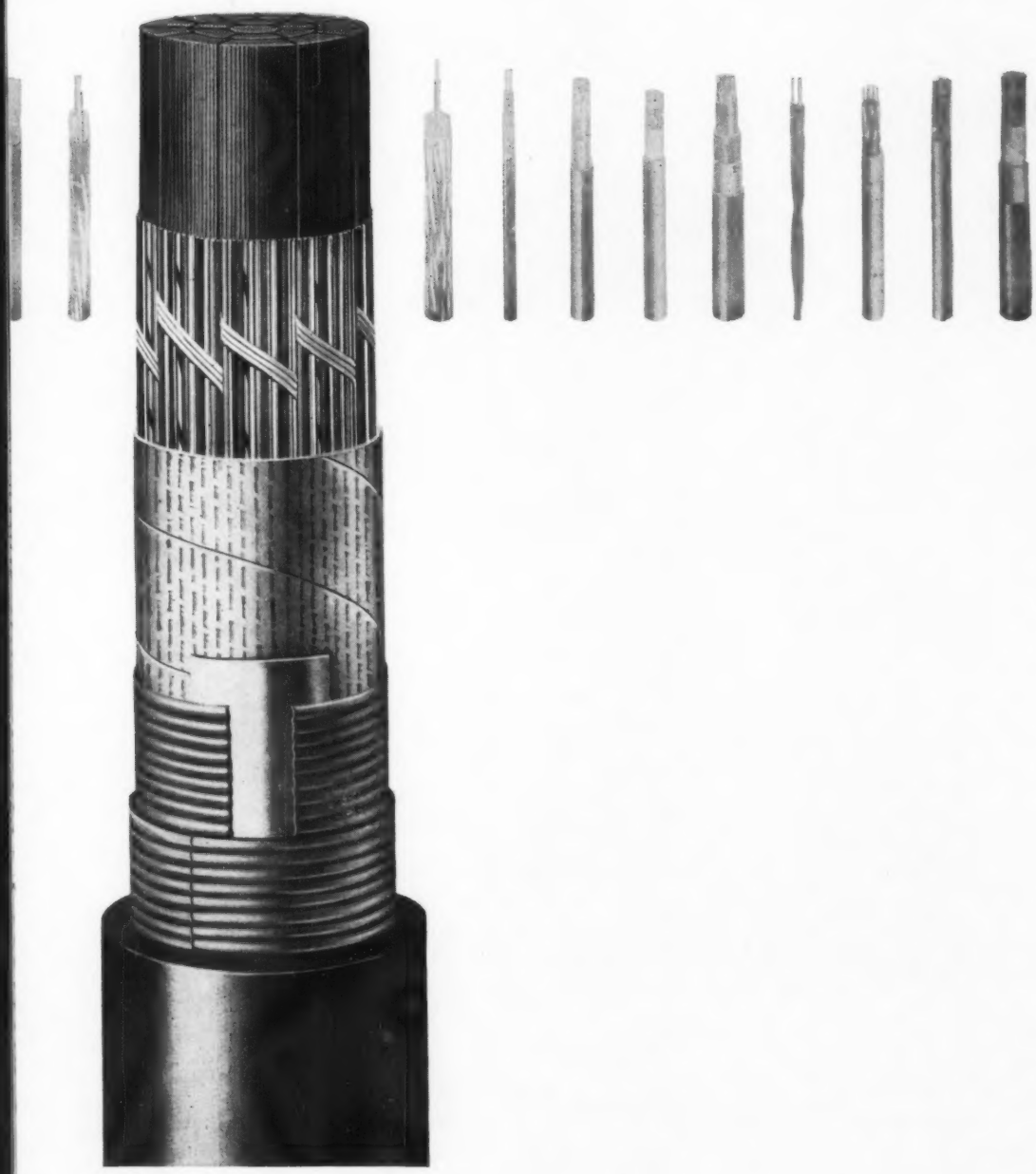

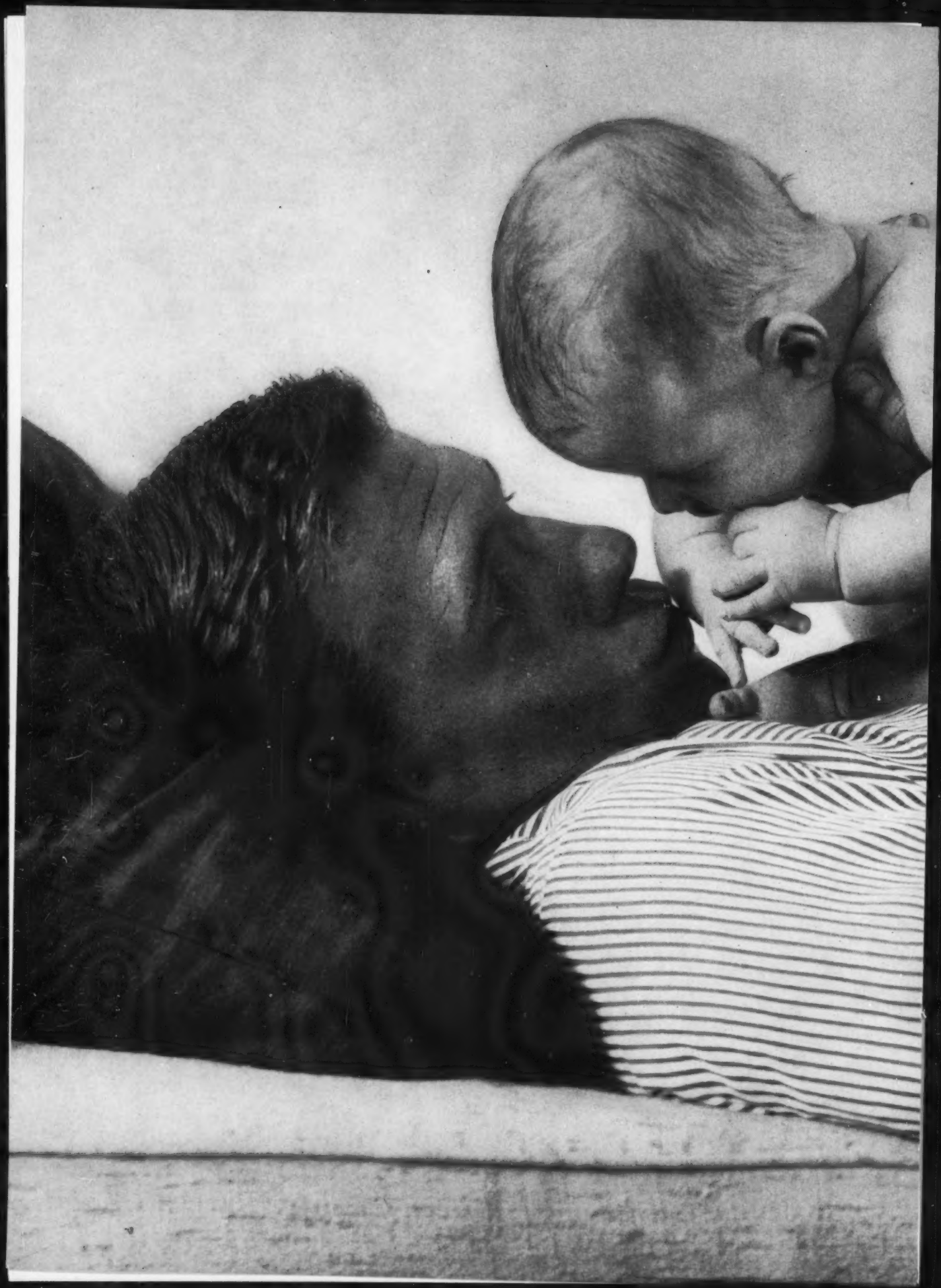

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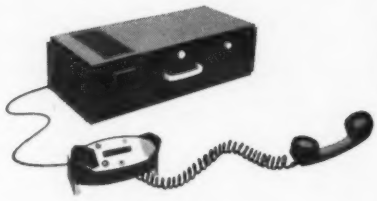

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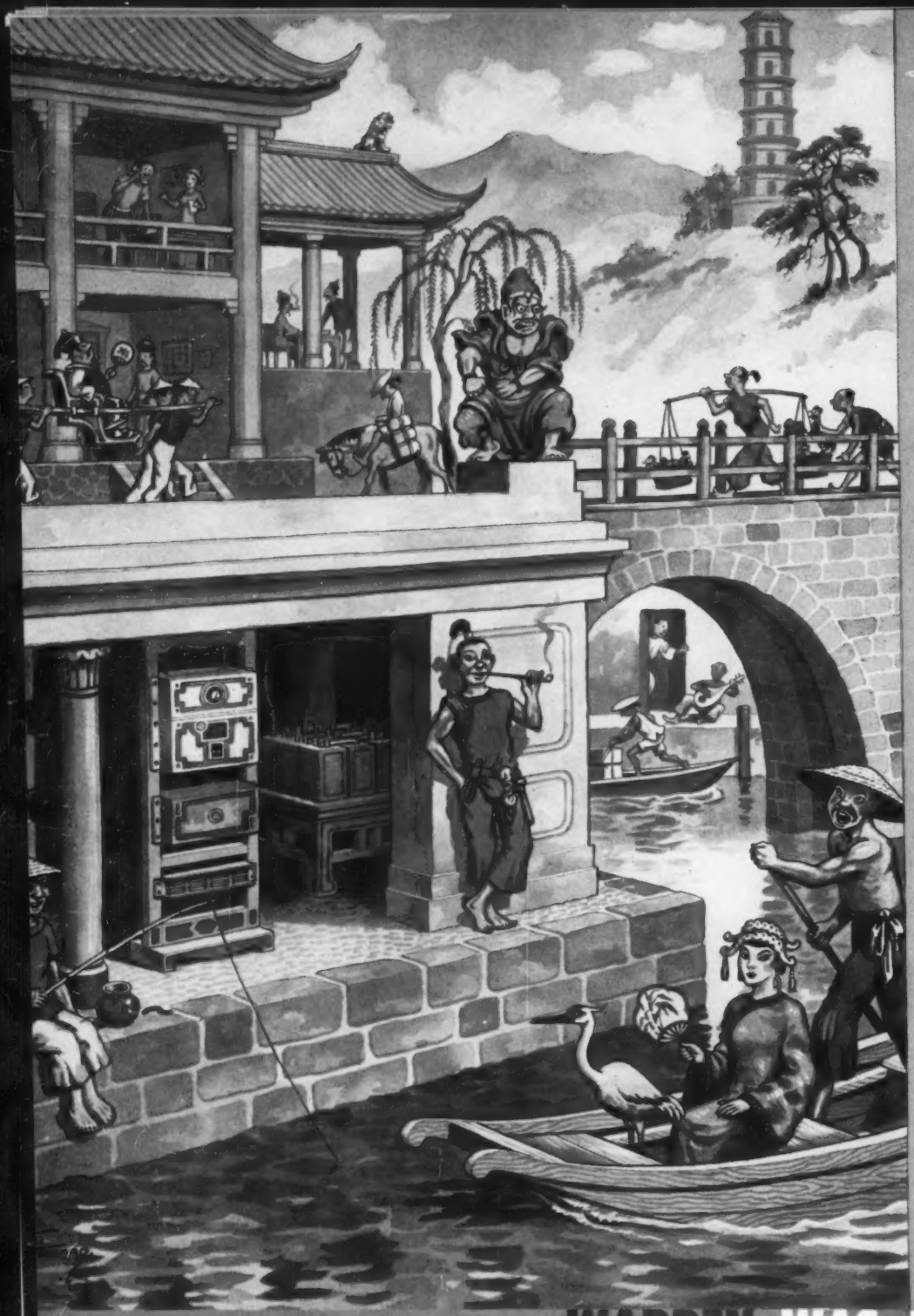

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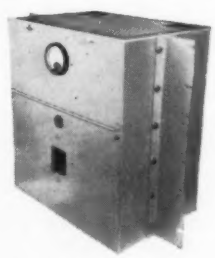

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# Too Many Cooks?

NOBODY HAS EVER been able to improve on the practicality of that famous old French recipe for rabbit stew, which begins "First, you catch a rabbit!" The way some federal agencies are stewing around with the all-important space communications satellite program in Washington these days, we can think of no better advice. We would paraphrase it "First, you put the satellites into orbit!"

After that, such supplementary problems as who should operate how much of what, and whether foreign nations should be permitted to use the facilities, and so on and on, can all be worked out. We rejoice that Vice President Lyndon Johnson, in his role as director of the government's highest space council, seems to share this point of view, and has so advised President Kennedy.

The trouble with the recent situation in Washington, in which several government agencies were trying to put across their particular slant on what to do *after* the satellites are in business, is that it is an open invitation to interminable delay and frustration. It is something like a family argument over a guest list, or house rules, before the house is even built.

This is a situation made to order for certain sneaky, tireless types, ever present and all too common around Washington these days, to come up with their inevitable remedy for every problem under the sun: "The federal government will have to run the whole business—that is the only way to end the arguments!" These are often the very people who continue to inject and agitate extraneous issues in the hope of bringing everybody around to their own pet solution by default and futility. They don't really want to settle the arguments. They want government ownership.

Now, it is understandable that a number of private communications business interests, both utility and manufacturing, should want to participate in this marvelous opportunity to send telephone messages and other forms of intelligence all over the world via relays through space. It is understandable that these private enterprises would like to have their stakes considered while the planning is in the plastic stage, and before they are irretrievably frozen out of the whole setup. But that is not the real snag which is holding up the parade of satellites. That could be solved in short order by formula or joint venture, either before or after the fact of a communications satellite system in operation.

Neither the American Telephone & Telegraph Co., frontrunner of the private enterprisers in mapping plans for this program, nor other American common carriers, have ever had any difficulty in working out joint participation arrangements with other communications interests in the past, including foreign governments in the telephone business. No, the real stumbling block (or so we are informed) consisted of certain government agencies who are worried about strictly nonoperating problems in the future, some of which may never arise.

When, for example, have American telephone companies — Bell or Independent — ever denied foreign governments full and free access to all communications facilities under their control? Has any foreign government—black, red, pink, or any other color—ever had any cause for complaint that private telephone interests in the United States were cutting them off or refusing to reach reasonable agreements about such matters as cable, circuits, terminal facilities, etc.?

We welcome recent reports that Vice President Johnson has recommended to President Kennedy that private enterprise should be given this job. We know that the Vice President, with all his talent for harmony and co-ordination, had to knock some pretty big heads together to get that much agreement with those with whom he has been conferring. We hope that President Kennedy takes this sound advice and gets this show on the road without further delay. We hope that both the Federal Communications Commission, in its control of radio frequencies, and the National Aeronautics and Space Administration, with its

*(Continued on page 50)*

# IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH AND LAWRENCE J. HOGAN
WASHINGTON EDITORS OF TELEPHONY

**Recommendation sent to President Kennedy that responsibility for readying communication satellites be given to private enterprise. Hearings on satellite frequency allocations will go ahead. Pros and cons on tax credits for utilities. FCC continues study of long-distance rates, overseas cost.**

SHORTLY AFTER mid-July, an important meeting took place in Washington, D. C., on the subject of communications space satellites. It was a top-level meeting, held under the direction of President Kennedy's chief of the council on space affairs, Vice President Lyndon B. Johnson. No official news release was made after the meeting and none had been forthcoming up to the time of this writing. Hence, all the various reports and rumors of what took place and what was decided by whom will have to be hung on that faithful old anonymity—a "confidential source."

Yet, substantially the same story had been leaking all over Washington for the past week wherever newsmen gathered. And the gist of it was that Vice President Johnson, after consulting with Federal Communications Commission Chairman Newton N. Minow and National Aeronautics & Space Administration Chief James E. Webb, had decided that private enterprise, rather than direct government operation, should take the responsibility of "fielding" the communications satellites. It was reliably reported, furthermore, that Johnson himself was very much in favor of this solution, and had so recommended to President Kennedy. What Kennedy decides, and he will in all probability decide to follow the advice of his deputy, the Vice President, will doubtless be made the subject of a forthcoming announcement from the White House.

The American Telephone & Telegraph Co. and other common carriers which have been pulling the laboring oar on this program, will probably get the nod to go ahead with the job of putting up the satellites. Other communications interests, foreign and domestic, which have indicated a desire to participate, will probably have their roles considered; but to what extent they will share in the satellite setup was not immediately disclosed.

This may seem like an easy and logical conclusion—to allow private enterprise to do that which it has always done well, in this extension of the nation's telephone business to space relay operations. But actually there has been quite a lot of backing and filling. Readers of these pages have already been informed of earlier efforts to compare differences over the method or system of operation to be used—the low altitude orbits planned by the Bell engineers, and the higher altitude system favored by General Telephone, and the alternative system favored by General Electric. These technical differences, however, had been proceeding fairly well in the process of accommodation, when the more formidable policy questions intruded.

The Justice Department, fresh from its victory over price fixing in the electric manufacturing industry, was concerned lest the domination of any single communications system plan violate the antitrust laws. The State Department, sweating out the cold war propaganda, wanted to make sure that foreign countries would have access to any satellite communications facilities which might be put into orbit. There were even ideas expressed over using these facilities for educational purposes, in the case of certain retarded nations now emerging to their independence and new responsibilities in the dark continent of Africa. The Office of Civil & Defense Mobilization had some suggestions and so did others.

Apparently Vice President Johnson cut through these divergent opinions and, on July 16, was able to announce that the National Space Council had reached "a unanimous agreement" on a communications satellite policy. But Johnson's office at that time refused to say what the decision amounted to. It only announced that recommendations had been transmitted to the White House.

Johnson stated simply that: "Excellent cooperation among the many government agencies involved made this unanimous paper possible." He added: "I am pleased to turn it over to the President as a constructive proposal." The statement concluded with a list of agencies represented at the Council: State Department, Defense Department, Justice Department, NASA, Office of Civil & Defense Mobilization, and the Federal Communications Commission.

There still remains, of course, the hearings before two Congressional groups and before the FCC on the various applications for frequency allocations in space satellite communications. General Telephone & Electronics Corp. as well as American Telephone & Telegraph Co. will be among those slated to present testimony.

### *Elbowing for Space*

Clearly one of the most discussed items in Washington is the communications-space scramble. Not only is there competition for the plum between gov-

ernment agencies; between government agencies and private enterprise; and between individual companies, but there is also considerable controversy on Capitol Hill as to which committees have jurisdiction over space communications.

The House Science & Astronautics Committee headed by Rep. Overton Brooks (D., La.) heard testimony by representatives of the National Aeronautics & Space Administration—which falls under its jurisdiction — and the Federal Communications Commission on future satellite communications plans.

The House Commerce Committee which oversees activities of the FCC is also hearing witnesses on space communications. Its Communications subcommittee originally planned to hold hearings, but the topic is of such great interest to legislators that the full committee decided to entertain the witnesses.

On the other side of the Capitol, Sen. Russell Long's Small Business Subcommittee plans to commence hearings on Aug. 2 on satellite communications. NASA which plans to orbit its own communications satellite, Project Relay, under a contract with RCA, told the House Science & Astronautics Committee that it favors letting AT&T carry the ball on the communications satellite system. Administrator James E. Webb told the Brooks Committee that the traditional private enterprise system seemed to be the best of several alternatives for getting the program in orbit.

FCC Commissioner T. A. M. Craven told the same committee that his agency and NASA had worked out an agreement for setting up a satellite system under the free enterprise system for global television, trans-world telecommunications, etc. He also said that FCC is negotiating with other nations for space communications frequencies.

A point of controversy has been which method would enable us to beat the Russians with satellite space communication. One faction contended that the government could get the job done faster (which should come as a surprise to anyone who has ever had any dealings with the federal government). The successful faction, with FCC playing a major role, felt that the technical capability of AT&T and some of the other big companies coupled with their ability and willingness to expend considerable sums of money on the program (estimated at 50 and 200 million dollars) would be decisive. The communications knowhow of these companies and the necessity for using their skills and existing ground communications facilities to make any such system feasible, apparently influenced the deliberations.

The broad governmental control is expected to include determining the number of satellites to be orbited, the paths of orbit, and numerous other aspects of the program.

### *Tax Credits—Why Not for Utilities?*

The House Committee on Ways & Means has been working very hard recently on some of President Kennedy's proposed tax reforms. Already discussed in this department was the proposal to make the cooperatives pay income taxes as recommended by the President. But as this change, even if enacted, would not affect Rural Electrification Administration co-ops (the President expressly asked that REA co-op tax exemption be retained), there is no remaining significance in this proposal from the utility point of view.

Perhaps a more striking example, however, of the administration's proneness to discrimination against public utilities is the proposal to provide for tax credit as an alternative to accelerated depreciation for tax purposes. It will be recalled that here again President Kennedy expressly urged that public utilities should *not* be permitted to share in the advantage of the tax credit proposal.

The House committee has approved a compromise tax credit program which would cut taxes for corporations, business proprietors, farmers, and other self-employed persons by 1.2 billion dollars. The administration had designed the measure as a spur to the economy. The tax relief would amount to 8 per cent of the amount spent by the taxpayer in the purchase of equipment, tools, and other income-producing assets.

It is difficult to see just why the White House insists on discriminating against telephone companies and other utilities by refusing to make the tax credit provision generally available. It is rationalized, of course, that public utilities have a service obligation to build as much plant as is necessary to render safe, adequate, and complete service and to anticipate the demands of such service requirements in the future.

It is arguable that they, therefore, need no special "tax incentives." But this does not square with the fact that on two previous occasions Congress did amend the 1954 Internal Revenue Act so as to provide that public utilities should have the right to take advantage of both: (1) the five-year rapid amortization where certificates for defense purposes were granted; (2) the accelerated depreciation. In other words, Congress made no distinction between utilities and nonutilities in enacting these two previous forms of tax depreciation electives. Why then should utilities be barred, simply because they are utilities, from the new proposal for using "tax incentives"?

It is true that Bell System companies have generally followed the traditional pattern of using a "straight line" tax depreciation program using equal installments throughout the estimated life of depreciable plant. But even Bell System companies would certainly like to have the opportunity of making this "election" on their own choice, just like any other taxpayer. Why should telephone companies have to have the choice made for them by Congress, through a provision forbidding them to take advantage of the tax credit whereas other taxpayers are permitted, and even urged, to use such short-term tax advantages?

As a matter of fact, the use of the "tax credit incentive" is all the more important to public utilities because, by interpretation of the state regulatory commissions, they have been denied any practical advantage of accelerated depreciation for tax purposes in about half the states. These are the states in which any deduction for accelerated depreciation must be passed on to the consumer under the so-called "flow through" treatment rather than be retained under the so-called "normalized tax" treatment.

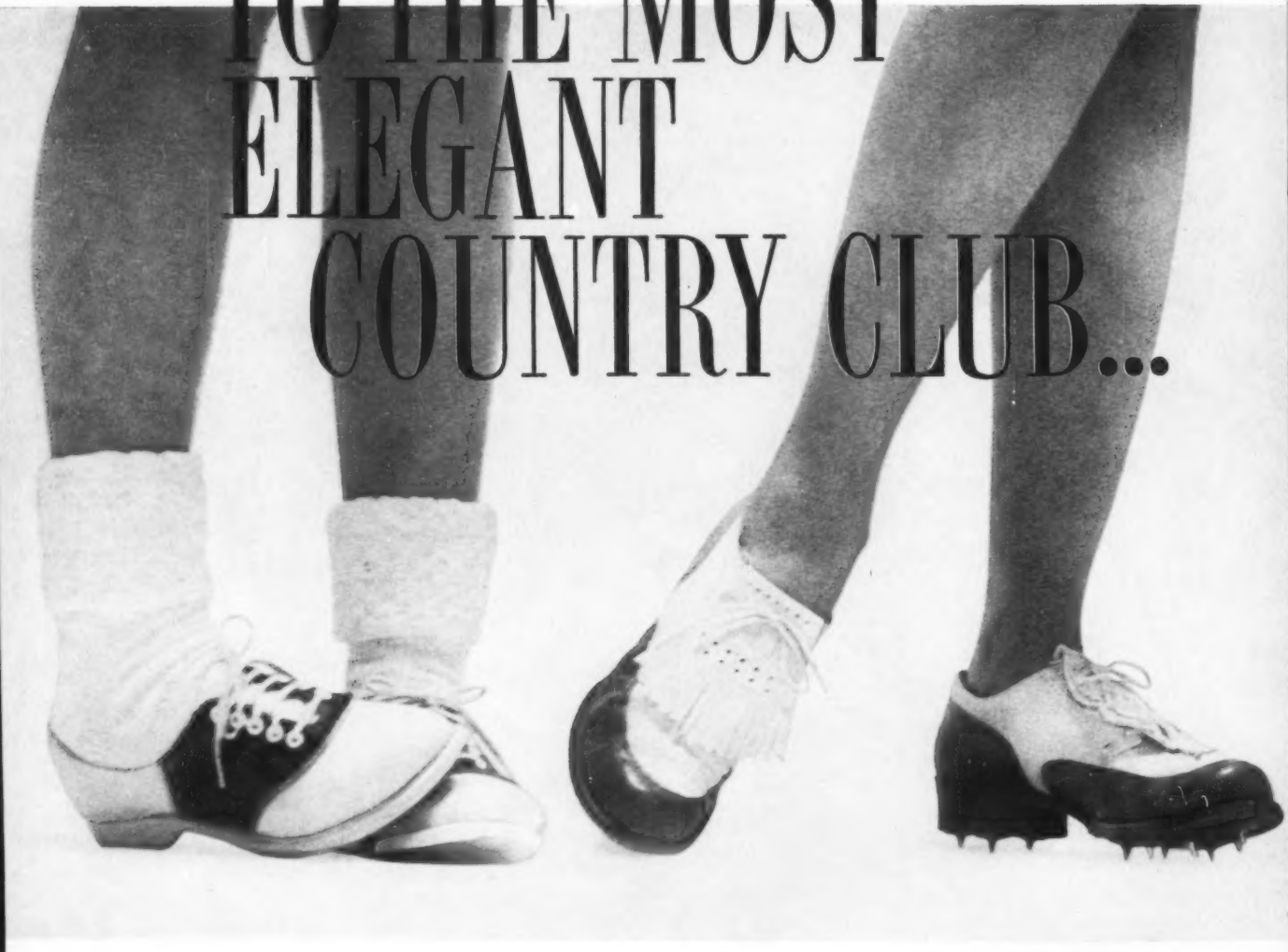
The gas and electric companies have been equally anxious to share in the advantages of tax credit provisions—or at least be given the opportunity of deciding for themselves whether they wanted to share or not. The Independent telephone companies are probably of the same mind. Singling out the utilities as being ineligible for the tax credit advantages is something like making them second-class citizens.

The President suffered a setback in his plea to raise 450 million dollars by boosting taxes on income from dividends to the same level as those on wages and other earned income. The present tax rate is 4 per cent lower on all dividends than on wages and salaries.

As for taxing co-ops, other than REA borrowers, the House Ways & Means Committee has tentatively approved legislation designed to close a court-created loop-hole for cooperatives. The purpose of the measure is to make certain that someone, either the co-op or its patrons, pays taxes on a cooperative's earnings from business activities. At present, co-ops may avoid the taxes if they allocate earnings among patrons and issue them certificates. The patrons are also exempt since the courts have held the certificates are not tax-

*(Continued on page 49)*

# FROM THE CORNER DRUG STORE TO THE MOST ELEGANT COUNTRY CLUB...



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ITT Kellogg Paystations can be quickly installed practically anywhere: in booths or boothettes, on counter tops, can even be used as a *portable* pay phone. Ease of installation, plus maximum security, are achieved through base plate mounting.

Features rugged 2-section pressed steel housing...many standard, and interchangeable, K-500 parts, including K-500 handset and dial mechanism...coded keys, coded self-locking coin boxes...loop resistance 1000 ohms including the instrument. Also available with slug magnet, spare coin box, universal mounting adapter.

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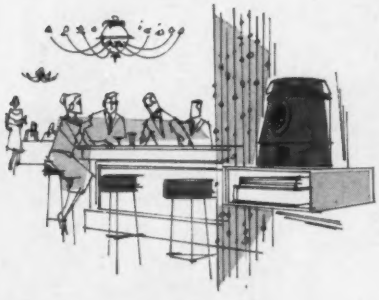

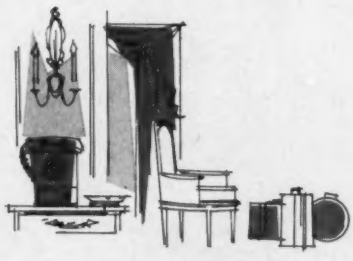

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*Annual Review*

# New Developments in Telephony

*By RAY BLAIN, Technical Editorial Director*

THIS IS THE third article in a series describing various new items of equipment and their application in telephony. The first article appeared in the July 15 issue, and the second in the July 22 issue.

Readers desiring additional information on any of the products described should write the manufacturers or TELEPHONY.

* * * * *

**DC to DC Voltage Changer. (Fig. 18).** Model QB15A3, as well as several voltage increases, has been added to the

**Fig. 18. DC to DC voltage changer.** Lorain Products Corp. line of BAT-TAP voltage changers. Model QB15A3 converts 48-volt dc source voltage to nominal 24-volt output and includes output failure alarm relay and lamp and paralleling circuitry so that the unit may be connected to share the load with other units.

An ammeter is also provided. The paralleling circuit is so arranged that should one unit fail, the remaining unit is protected and continues to operate in the circuit.

•

**No-Charge Alarm Relays. (Fig. 19).** No-charge alarm relays are designed for installation in assemblies which include a Lorain constant voltage charger and one or more Lorain constant current supplementary chargers. They are designed to operate upon failure of the supplementary charger to deliver the added current required by an increase in load. Installation is readily and easily made and the relay itself may be mounted on any convenient flat surface.

All models are 6¼ inches x 3 inches x 4¼ inches over-all. The various models are designed to operate, respectively, with the various standard current rating combinations of constant voltage-constant current charger installations. These relays indicate when the load demand has exceeded the combined capacity of the main, constant voltage Flotrol charger and the supplementary, constant current Flotrol charger, or when the supplementary charger fails to respond to increased load demand.

**Fig. 19. No-charge alarm relay.**

•

**Transistorized Interrupter. (Fig. 20).** The Lorain Model NRT1 power supply for PBX and PABX installations is a versatile unit providing busy tone (.5 volt), dial tone (1 volt), all trunks busy tone (3 volts), interrupted ringing (90 or 105 volts), and continuous ringing (90 or 105 volts), together with 1 ampere each of 60 IPM and 120 IPM ground pulse output.

**Fig. 20. Transistorized interrupter.**

Audible ringback tone is superimposed on all ringing power supplied by the unit. This device is designed for 23-inch rack mounting and occupies only 8¾ inches of vertical rack space.

•

**Signaling Test Power Supply. (Fig. 21).** This compact, portable unit is housed in a carrying case 7 inches x 7 inches x 11 inches and weighs only 17 pounds. The circuit is transistorized, operating from 48-volt office battery. Three output voltages are available—24 volts dc at 31MA, 48 volts dc at 250MA, and 130 volts dc at 180MA. Lorain Model TS101 is ideal for use as

**Fig. 21. Signaling test power supply.**

a signaling test power supply in smaller exchanges having only 48-volt office battery available.

•

**Battery-less Carrier Supply. (Fig. 22).** Lorain Type J716 carrier supply is designed to supply uninterrupted 130-volt plate supply from standard 115-volt ac source, standby power being obtained from 48-volt office battery upon failure of the ac source. No vibrators or other parts requiring routine maintenance are used.

The assembly is rack-mounted and includes an ac operated 130-volt Flotrol rectifier unit together with a static dc to dc converter. The converter supplies 130-volt dc power from 48-volt office battery upon failure of the ac source.

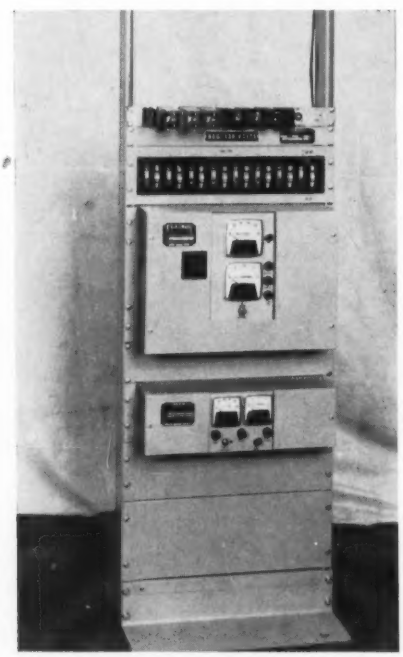


**Fig. 22. Batteryless carrier supply.**

These assemblies are available for 2, 5 and 10-ampere capacity. Each assembly includes panels for distribution fusing and for alarms. The alarms comprise fuse alarm, rectifier fail alarm and transfer alarm.

•

**Demonstrator Power Supply. (Fig. 23).** Lorain Model TE20Y power supply is operated by two size "D" flashlight batteries and is only 6¾ inches x 2½ inches x 3⅝ inches over-all. Carried and operated in one hand, it is ideal to provide 0.5 watt of 20-cycle power to ring demonstrator bell chimes. Thus, the bell chime demonstration is at the

**Fig. 23. Demonstrator power supply.**

door of the prospective customer and installation of the chime in the subscriber's line is eliminated. Operation of the power supply unit enables the chime to be operated at will. Each installer can become a bell chime salesman on each call without unduly delaying call schedules.

•

**Subscriber Transfer Circuit. (Fig. 24).** The Leich Electric Co. subscriber transfer circuit increases telephone efficiency for any business establishment. This circuit permits a businessman to transfer calls from his office telephone to his residence when the office is closed.

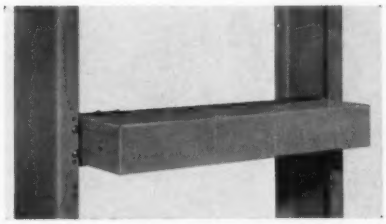


**Fig. 24. Subscriber transfer unit.**

By operating a key before he leaves the office, he automatically transfers his incoming office calls to his home telephone. The only requirement is that both telephones must have the same frequency ringer. He receives other calls at home and makes calls in the usual manner.

The circuit can be used with any dial system. The only requirement is that ground or low resistance ground be placed on the sleeve conductor associated with a line upon seizure and while the line is busy.

This unit mounts easily on any 19 inch relay rack. Each unit is 2⅝ inches high, and consists of three transfer circuits. Two units take five relay rack spaces.

•

**Fire Alarm Conference Circuits. (Fig. 25).** Leich now has two types of fire alarm conference service available. With this service, any subscriber can originate a fire call by dialing a regular 4, 5 or 7-digit number.

Standard residential telephones can be used as the fire answering telephones. If desired, a second telephone, less dial, can be installed to serve as the fire telephone. A grounding push-button or key can be installed to sound a fire alarm siren. The two systems are described as follows:

**Type "A"**

(1) Any subscriber, and any fireman

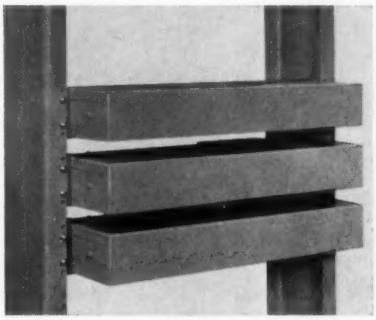


**Fig. 25. Fire alarm conference circuit.**

on the conference circuit can originate a fire call. A monitoring telephone in the fire station can also make the fire call.

(2) If any fire lines are busy during a fire call, warning tone "clicks" or dial tone "zips" signal the alarm condition. When the busy line is released, ringing starts automatically.

(3) Answering station loop limits are 1,000 ohms.

(4) The fire conference is held busy if the originating or answering telephones are "off-hook."

(5) It is possible to signal more than one fireman on a multi-party line with the use of auxiliary ringers. One frequency would be reserved for this purpose with the auxiliary ringers only being rung during a fire call.

(6) Continuous ringing distinguishes an alarm call from a regular call. Any ringing frequency may be assigned to the fire lines.

(7) Each fire telephone rings until answered or until the fire circuit is released. Ringback tone is furnished to the calling party until the first fire telephone answers.

(8) The equipment is furnished with two fire lines on the first bar and three

fire lines on each succeeding bar (i.e., 2; 5; 8; 11 lines).

(9) After a fireman answers an alarm, he may disconnect from the conference to make other calls. The warning tone will not be applied to subsequent calls while the alarm is in progress. The fireman may not rejoin the conference unless the originating party disconnects, and the fire reporting number is dialed again in the regular manner.

(10) A modified message recorder can be used to obtain a continuous permanent recording of what is said over the conference circuit. A ground signal, obtained when the first party answers, starts the recorder. It continues in operation as long as any answering party remains connected. Another ground signal, obtained when the originating party disconnects, starts the playback of the recorded message.

A continuous tape that is erased manually after each alarm must be used.

**Type "B"**

(1) Same as for the Type "A," except no provision for monitoring telephone.

(2), (3), (4) and (5). Same as for Type "A."

(6) Continuous ringing distinguishes an alarm call from a regular call. Three individual frequencies may be assigned to each relay bar. This circuit rings only on the negative side of the line.

(7) All fire lines cease to ring after the first telephone is answered. Ringback tone is furnished to the calling party until the first fire telephone answers.

(8) The equipment is furnished with eight fire lines on a relay bar. If more than eight lines are required, you can add a second or third relay bar.

(9) Firemen cannot disconnect from an alarm conference to make other calls. If the first answering fireman wishes to continue ringing the other fire telephones, he simply hangs up. The other telephones automatically begin ringing again as long as the originating party holds the connection. After all the firemen are alerted, the calling party may hang up. All the fire lines remain connected in a conference until the last fireman hangs up.

•

**Artificial Line. (Fig. 26).** The TLA-0100 artificial line of Hallamore Electronics Co. is a device designed to permit the simulation of the circuit characteristics which may exist in outside plant. The design is such that maximum flexibility is obtained with respect to load distribution, cable characteristics, and termination. Nearly precise simulation of cable characteristics is achieved through the use of Campbell sections, where necessary.

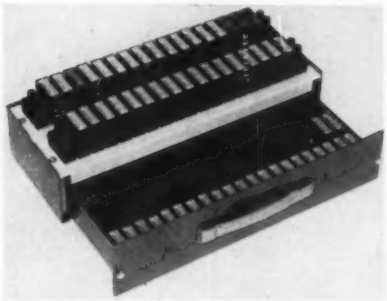


**Fig. 26. Artificial line.**

By the use of plug-in modules containing various lengths of line section and types of load, four commonly used loading schemes, namely B88, D88, H88, and M88, may be applied to any one of a combination of six types of cable: 19 CNB, 19 DNB, 22 CSA, 24 DSM, 24 CSM and 26 BST. Load spacing and end-sections may be adjusted in increments of 150 feet. Line section resistance and capacitance are held within two per cent of actual cable constants.

Five types of load modules are available, three of them constituting normal loads of 44, 88 and 175 millihenrys, and the other two having 88 millihenrys with one side omitted or reversed. Inductances are held within 1 per cent of the nominal values.

The plug board is arranged to provide two groups of receptacles, 19 in each, with each group connected in series, but with no connection between the groups. This arrangement affords the means to establish two separate lines, each of which may be tapped at any point for the simulation of bridged-tap conditions or other faults.

Negative impedance repeater strapping can be adjusted for individual line conditions using the repeaters first on the artificial line. This practice saves valuable time of plant personnel experimenting with varied strappings on actual circuits.

The artificial line can also be used for training purposes to instruct cable splicers, plant engineers and central office personnel. The results of various troubles and circuit conditions, such as bridged taps, defective loading, shorts, crosses, and other typical faults can be simulated.

By building the line in advance on your work bench, you can determine in advance the return loss of a proposed facility, and by adjusting the artificial line you may experiment on improving return loss by load spacing adjustments and gauge changes. Too often, for example, expensive circuit changes are made in the field without a real knowledge of the degree of circuit improvement to be expected from the relocation of a load point. This costly method may be eliminated by the use of this artificial line as it removes all guesswork from the problem.

•

**Test Hybrid Set. (Fig. 27).** The Hallamore test hybrid set, THS-0100, is an instrument which incorporates the necessary transformers, balancing networks, access jacks and switching for performing all standard measurements of return loss and for adjustment of building-out capacitance or compensation on telephone cable circuits.

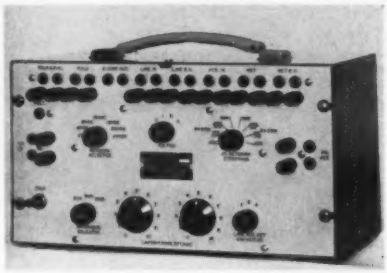


**Fig. 27. Test hybrid set.**

The device eliminates the need for assembling a collection of components, some of which may not be readily available, and for connecting them properly. This process is so time-consuming as to be prohibitive where large numbers of circuits are to be tested. Furthermore, errors in connection or network strapping can completely nullify the test effort.

All of the commonly required capabilities are embraced by the THS-0100. The full complement of balancing networks includes compromise networks for 600, 900 and 1,500 ohms, as well as precision networks for 19H88, 22H88 and 24H88 loaded circuits. The precision networks are identically equivalent to the Western Electric 115H and 115AL networks. The strapping options of these networks are available on a switched rather than a soldered-strap basis. Four-wire pads of 1, 2 and 3 decibels and line and net capacitors of 1, 2 and 4 microfarads are provided. A two-section capacitance decade ranging from .001 to .11 microfarads is included for the adjustment of line or net build-out. An inductor (44 mh loading coil) is used in conjunction with the capacitance decade to constitute an impedance compensator.

Maximum flexibility of access is provided by suitably identified jacks.

The instrument is completely self-contained in a housing which measures 13 inches x 7 inches x 6 inches, with the cover in place. The hinged cover may be removed for convenience. A comfortable leather instrument handle provides easy portability.

•

**Fault Locator. (Fig. 28).** The Northeast Electronics Corp.'s Model TTS 17 Fault Locater was originally designed to use the reflected pulse technique for locating faults on open wire lines. Distances up to 300 miles can be covered. A marker pulse positioned by a dial calibrated in one-quarter mile divisions

*(Continued on page 53)*

## New Yorkers Urged—

# Meet the Challenges of Change

*By Helen Hardin*

THE PROGRAM OF the New York State Telephone Association, convened in its 39th annual convention, at Schroon Lake, June 19, 20, and 21, reflected that intensive theme of the "Soaring Sixties," the challenge of change.

First to deliver on the challenge-of-change theme was association president, George S. Beckwith of Keeseville. Mr. Beckwith demonstrated not only his enthusiasm for the Empire State's beauty and other merits, but reiterated that a company's growth can be largely credited to the growth potentials to be found under the free enterprise form of government.

Mr. Beckwith pointed out that in the United States, "we have about two-thirds of all the world's telephones in use . . ." and this is "what a nation with about 6 per cent of the world's population has been able to do.

"This is what a nation of free men has done," he added. "With this kind of a record, is there any sound reason for trading our form of government for an untried socialistic experiment?"

Summarizing, Mr. Beckwith said:

"The independent voters of this country hold the balance of power . . . they are the real 'Boss' in this country. And you business men are the independent voters and it's up to you to get back on the political throne that you have abdicated so long . . . Shakespeare said it all many years ago: 'The fault, dear Brutus, lies not in our stars, but in ourselves, that we are underlings.'"

Hamilton A. Cunningham of Albany, executive secretary of the New York association, reported that this meeting of New York telephone men and women and associate members and suppliers to the industry, had a registered attendance of 430, a little more than 76 per cent, or a record for number of operating companies; and also a record of more than 56 per cent, for associate member companies present.

Mr. Cunningham's report on the year's work told of an on-going revision of the constitution and by-laws, including proposed changes in basic structure, and a reduction of the number of New York district directors, in accordance with a realignment of the district territories.

He strongly recommended member cooperation in current toll settlement studies under way, both on the part of USITA, and of the New York association's committee.

Noteworthy was the enactment of legislation protecting the industry against misuse of toll credit cards, as well as other types of cards. Cunningham stated that in New York "it is now a misdemeanor for a person to wilfully charge a toll message to a credit card number or another telephone without the knowledge and consent of the person to whom the credit card was issued or who is the subscriber."

Under the title of his address, "The Challenge of Change," the secretary noted the growth of competition of communication services and products for the telephone industry from various outside sources, including privately-owned microwave systems.

"We cannot afford to ignore this new challenge," he said. ". . . We've got to improve over-all performance. This covers a lot of ground. It means putting new and better products into the service we give. . . . It means providing more new and optional services, and selling them hard. It means attracting

**Officers and directors of New York State Telephone Association, who met at Scaroon Manor, Schroon Lake, N. Y. on June 20. (Left to right, seated): Secretary-assistant treasurer, Donald F. Davison of Spencerport; president, George S. Beckwith of Keeseville; vice-president, C. Ray Lloyd of Manlius; treasurer, W. Malcolm Griswold of Phelps; and executive secretary, Hamilton A. Cunningham of Albany. Standing (left to right): Directors S. Fenton Busfield of Deposit; Lewis F. Shepherd of Jamestown; Marshall K. Taylor of Johnstown; Roderick A. Nixon of Westfield; William A. Kern of Rochester; William S. Kingman of Norwich; Fred S. Florance of Monroe; and John B. Ackley of Copake.**

good people and developing a strong management team. . . .

"Some of our problems in improving day-to-day service may seem obvious—an installer keeping appointments on time, a service representative making sure that the customer gets exactly what he needs and wants, an operator making the extra effort in coping with the unusual situations." Yet, Mr. Cunningham indicated, these are the attentions that make for subscriber satisfaction. Noting the advantages inherent in improvements due to automation, Mr. Cunningham warned that automation is only part of the picture. Automation and progress go together, he said, but "*people* are, and always will be, the heart and soul of our enterprise."

In looking broadly at the industry needs, he urged anticipation of the changes and demands of the industry's large business customers, as well as quick action on the part of suppliers to produce the problem-solving communications devices required.

Other areas of service opportunity for operating companies, he said, include such new services as Telpak and WATS, for customers with heavy long distance calling needs; realistic planning to help meet the tax problem; a program of education of the public regarding taxes in the telephone industry; and competitive pricing for more efficient operation.

In conclusion, Mr. Cunningham said, "It's now becoming clear that improved operations and intelligent risk-taking result in a better product for the customers' money. A company can improve its operations and take risks only in a climate that permits better profits . . . (which means) meeting competition squarely . . ."

**Mrs. William S. Kingman of Norwich, N. Y. accepts sterling silverware gift from New York Association's executive secretary Hamilton A. Cunningham in behalf of her father, William A. Seely, who retired from the NYSTA board of directors after serving continuously since 1922.**

**Frank D. Fancher of Middletown, N.Y. receives sterling silverware presented by Hamilton A. Cunningham, commemorating Mr. Fancher's retirement from the NYSTA board of directors after 40 years' continuous service. Mr. Fancher was member of the charter group which formed NYSTA in January, 1921.**

Clifford S. Pearce of Riceville, Ia., president of the United States Independent Telephone Association, spoke on the "Frontiers in Communications." Himself the manager and purchasing agent of the Farmers Telephone Co. in Riceville, Mr. Pearce told New Yorkers it is becoming more and more important for each Independent company to be active in its state and in the national association.

To help conquer some of the problems changes present, he pointed out. "We are helpless as individuals," and "must work in close harmony to cope with the complex problems that face us. Each of us operates a segment of a highly complicated communications machine, and we must see to it that this cooperation continues and improves if we are to provide the best possible service to our customers."

President Pearce believes that telephony's greatest opportunities still lie ahead of the industry. In order to insure readiness for these, he warned of other industries which in recent years have been faced with similar challenges, but failed. In each case where competition took business away, he said, it was because of a failure in management, which refused to reorient and reorganize for the challenge. He assured the New York association that "we can and will meet the competition."

William A. Kern, president of the Rochester (N. Y.) Telephone Corp., in discussing problems facing Independent telephone companies, emphasized to the convention the difficult position in which many Independents find themselves in securing sufficient revenue from local rates to produce adequate earnings on a constantly growing investment in plant.

Mr. Kern defined an Independent company, for purposes of his discussion, as one that

"(1) Is not owned by a holding company, particularly one with a manufacturing subsidiary.

"(2) Is conventionally financed, without REA subsidy.

"(3) Receives a conventional return on its toll plant—between 7 and 8 per cent. More than that constitutes a false 'subsidy' by a telephone system."

Mr. Kern observed:

"There are limits beyond which local rates cannot go, no matter how well justified they might be from the investment or rate base theories. When this situation occurs, an Independent company has but two paths open.

"First, it can seek a larger toll settlement from the . . . (Bell) company. Secondly, it can go to the federal government for REA money.

"If it chooses neither of these, it sells its property and franchise to a larger company, or to an individual who will probably obtain REA money to finance his new purchase."

Pointing out that Bell System companies pay lower prices for equipment than Independent companies, resulting in lower per station plant investments, Mr. Kern suggested a further solution to the Independents' problem, which he termed, "the equalizing of prices for telephone equipment throughout the entire industry."

He said that, with lower plant investments, plus revenues from their toll systems, Bell companies are able to charge lower local rates than Independent companies must charge in towns of comparable size, which puts the Independents in a "squeeze."

Following Mr. Kern, Ralph A. Lehr of Buffalo, a member of the New York Public Service Commission, surveyed such subjects as "regulatory lag," in rendering rate case decisions, giving the reason for this when and where it occurs, and offered suggestions for timing in presenting rate increase petitions to the commission.

"Regulation is a two-way street," said Commissioner Lehr. "Delays may occur. But there are delays which might have been avoided had the companies involved given us sufficient advance notice of their intentions to enable full consideration of the matters before any proposed effective date."

*(Continued on page 51)*

## PAGING SERVICE

IN A PREVIOUS installment (TELEPHONY, May 27) we described a one-way signaling service developed by General Dynamics/Electronics, initially designed for industrial uses, and later offered as a new service to telephone company subscribers under the name of "Pagemaster" service. A continued discussion on the subject appeared in the "Electronics Section" (June 24 issue) and discussed some of the problems and considerations involved in establishing the one-way signaling service.

This installment, the third and final part on the subject will discuss practices and procedures that some companies have established in providing the new service.

First of all, as was pointed out in our earlier discussion, the possibility exists that the controlled signals can be set-up manually, or dialed—each operation normally being handled from an operator's position.

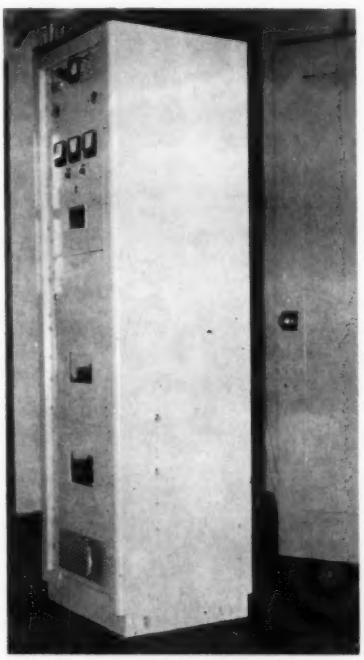
The manual system is, in many instances, being provided by the telephone company and is, for the most part, the same basic operation as discussed in Part 1 in the May 27 issue.

The basic equipment used in this operation normally consists of the Stromberg-Carlson encoder, Model 3RB and a Budelman B-250-VA4 transmitter. In addition, miscellaneous relay adaptations to permit timing of outgoing station call letters and disabling of mobile service, as outlined in Part II, in the June 24 issue, and transmitter accessories, such as the antenna system, are also applied.

Modifications to the basic encoder often are considered in order to:

(1) Reduce the time required for the transmission of outgoing signals.
(2) Provide a supervisory condition to the operator as an indication that sufficient time has elapsed since initiating the call signals to the subscriber until the actuating of the subscriber unit should have occurred.

As was stated in a previous installment, the basic model 3RB encoder consists of four code banks which permits the operator to initiate as many as four outgoing calls simultaneously. Each code bank is interrogated and transmitted each 20 seconds.



*The Budelman B-250-VA4 transmitter is being used by telephone companies as a basic component for the one-way signaling service. The unmodulated power input is nearly 400 watts and is designed to operate in the 30-50 megacycle band.*

Studies and tests have been conducted to determine the extent to which calls have been received by the customer. These various studies have led the experts to conclude that the paging of each subscriber should be conducted three times in succession, or at not too distant intervals.

If the basic system encoder is utilized, the time required to transmit the three signals is one minute. It is felt, by many telephone company traffic personnel, that this length of time is not desirable, especially where mobile service is provided and the fact that this service is disabled during the required signaling time.

To reduce the time at least 25 per cent or more, one operating telephone company modifies the circuitry of the code banks in such a manner as to reduce the number of code banks to two in number. Although the change reduces the number of simultaneous calls that may be initiated, experience indicates that satisfactory service may be given to a large number of subscribers, the exact number depending upon the calling rate.

To provide a supervisory condition to the operator as an indication that sufficient signaling has elapsed since initiating the call signals, thermal delay relays and lamps may be added to the encoder circuitry. One lamp and one relay are associated with each code bank. This feature is designed to function in the following manner: Upon placing the toggle switch associated with a given code bank in the ON position, contacts close to supply either battery

or ground to the delay relay. The relay, after the design period, will thereby actuate, closing its contacts to which the lamp is connected and energizing the lamp associated with the code bank. This, then, is the indication to the operator that a sufficient time has elapsed since initiation of the call until the subscriber should have been signaled.

In the manual system, other modifications and additions to basic equipment may be considered, the extent depending upon procedures and standards of the telephone company supplying the system and the coordination with existing services, such as mobile telephone service. The manual approach, while admittedly not exactly suitable from the standpoint of latest telephone operating techniques, will certainly provide an interim approach to the service until sufficient experience may be obtained.

An improved method to the provision of one-way signaling permits operation in a more realistic telephone approach. In this system, normal operation is from a telephone switchboard, by which the signaling service operator dials the assigned number into a signaling trunk. This operation causes a coded signal to be broadcast from the radio transmitter.

In a paper presented at the August, 1958 Western Electronics Convention (Wescon) in Los Angeles, Cal., by Newton Monk, Bell Telephone Laboratories, and Ed Guernsey, Ohio Bell Telephone Co., entitled "Personal Signaling, A New Telephone Service," they discussed the basic components of the dial system.

*Fig. 1* is a block diagram included in the paper given by Mr. Monk and Mr. Guernsey. As shown, there are two standard trunks which are connected into the signaling control terminal. Codes dialed into the signaling control terminal by the operator are stored in one of two registers. The coded signals are then passed to the radio transmitter to modulate a carrier, from which they are radiated by the antenna component.

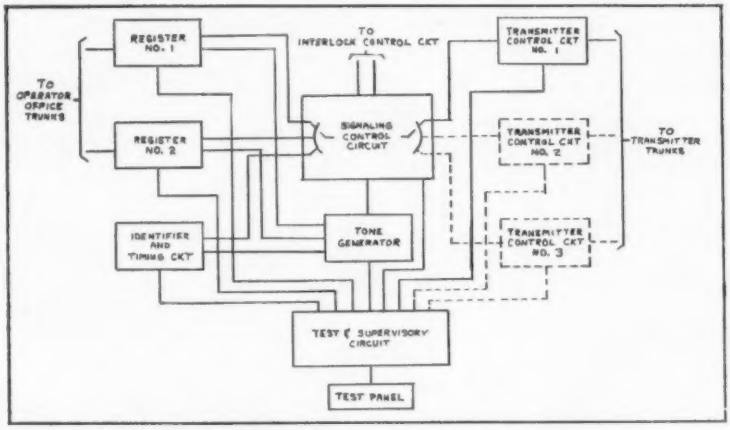



*Fig. 1. Block schematic of signaling control terminal.*

*The Model 3RB Encoder manufactured by Stromberg-Carlson and developed for use as a basic unit in the manual one-way signaling service. The unit shown above has been modified for transmission of coded signals from two-code banks and transmits each code twice each 20 seconds.*

Shown also is a connection to an interlock control circuit. It is the function of this connected circuit, although not shown, to prevent interference of a mobile telephone service by a paging service, and vice versa, as previously described.

The signaling control terminal is the nerve center of the one-way signaling service and is also manufactured by General Dynamics/Electronics to specifications of Bell Telephone Laboratories.

Included in the *Fig. 1* schematic are two registers, an identifier, a tone generator, and a signaling control circuit. Also a total of three transmitters are shown. This number may be used to provide more adequate coverage.

Features incorporated as a part of the radio transmitting apparatus, flash back a supervisory condition, denoting when the transmitter is in a radiation mode. After the proper indication, the coded signals are transmitted through the transmitter control circuit to a radio transmitter, from which the signals are sent out. Information, if stored in the second

register, is sent out as soon as information from the first register has been transmitted a total of three times.

The timing and identifier function to meet FCC requirements as previously discussed; to send station call letters in International Morse Code to a transmitter trunk in 30 minutes after the first personnel signaling, or as soon after as possible, so as not to interfere with normal communications.

Several Bell companies and some Independent telephone companies are now offering the new one-way signaling service. These companies are enthusiastic about the potential of this new service.

## ELECTRONICS LITERATURE

RECENTLY, there have been numerous texts and notes published and made available that certainly are worthwhile reviewing in this section. The subjects are quite varied, but each relates to a specific branch of the electronics art.

Considerable attention has been focused upon the Bell Systems' Mechanized Teletypewriter Exchange Service which is to be placed into operation in September, 1962. After that date, TWX service subscribers will access the Direct Distance Dial (DDD) network for connection of the "talking machines."

In order to assure that quality service will be provided, careful design of subscriber loops and remote exchange facilities becomes a necessity.

To enable the telephone transmission engineer to adequately design the facilities for MTWX, "Transmission Notes on TWX Modernization" is being made available to Independent telephone companies by the United States Independent Telephone Association, Pennsylvania Bldg., Washington, D. C.

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TRANSISTOR SUBSTITUTION HANDBOOK, by Howard W. Sams Engineering Staff; 96 pages, soft cover; price $1.50.

Transistors, on occasion, must be replaced as do most other components used in electronic circuits. In many instances, the exact type of transistor cannot be obtained, or is no longer manufactured. Whatever the circumstances may be, it is certain to create repair delays and, in short, customer dissatisfaction among other problems. In many instances, the delay cannot be tolerated. "Transistor Substitution Handbook" has been published to assist the technician in reducing this would-be "down-time."

The text lists over 6,500 direct transistor substitutions, along with a section devoted to semi-conductor diodes and rectifiers with recommended substitutes.

The text includes transistors manufactured in America, Germany, France, Italy, The Netherlands, England, Australia, and Japan. Information concerning each transistor includes whether the transistor is NPN, PNP, or Point Contact; the diagram number, which is keyed to the drawings in the center of the text, and the manufacturer who supplies the specified original unit.

This book may be ordered from TELEPHONY.

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TABLES AND FORMULAE

"Tables and Formulae" is the fourth of a series of pocketbooks published as circular 1985 and prepared by the Industrial Products Division of Automatic Electric Co. The 31-page booklet has been prepared to provide useful engineering information and contains tables on linear measure, square measure, liquid measure, mathematical symbols and constants, temperature conversion, electrical formulae, and many other factors too numerous to mention.

•

FUNDAMENTALS OF UHF by Allan Lytel; 160 pages, soft cover; price $3.90.

The radio frequency spectrum continues to become expanded to provide operating frequencies for new equipments. Mobile radio services, television, amateur service, and industrial services are among a few of the services which have caused the lower frequency allocations, that is, frequencies through the VHF (Very High Frequency) to 300 megacycles, to be crowded. For this reason, all new frequency assignments are in the UHF (Ultra High Frequency) spectrum (300—3,000 MC.), and beyond the SHF (Super High Frequency) band (3,000 — 30,000 MC.).

Circuit design in these upper portions of the radio spectrum is necessarily different than the design at the lower radio frequencies. This text provides not only a comprehensive coverage of these design problems, but also the UHF spectrum from the standpoint of antennas, transmission lines and wave propagation. Several chapters are also devoted to communications equipment and test equipment used in the UHF spectrum.

The text, although written at an intermediate level, provides valuable information for the engineer who desires an introduction to UHF.

This book may be ordered from TELEPHONY.

## ENGINEERING BULLETINS

THE UNITED States Independent Telephone Association has formed many sub-committees to function in the various branches of the telephone industry which include traffic, accounting and all aspects of engineering.

One of the main objectives of these groups is to assist Independent telephone company management in formulating policies and procedures.

The USITA Engineering Sub-committee has recently released several new and revised bulletins containing valuable information on such subjects as "Transmission Testing Procedures For Joint (Bell-Independent) Circuits," "Management Control and Measurement Indices," "Exchange Area Trunk Objectives," and "Subscriber Loop Objectives." All of these subjects must be considered in effecting transmission standards that must be met if a satisfactory grade of telephone service is to be provided.

## SCATTER SYSTEM INTERCONNECT

A NEW microwave relay communications system, currently undergoing performance tests prior to Signal Corps acceptance, will be interconnected into the existing Pacific Scatter Communications System. The new installation interconnects three military communications stations located on Luzon, Philippine Islands.

Clark Air Base Communication Center, Strategic Army Comunications Network HF Transmitter site, and the Pacific Ionoscatter Transmitter site comprise the three new stations.

The new system built by Page Communications Engineers, Inc., Washington, D. C., for the U. S. Army Signal Corps has been designed for a reliability in excess of 99 per cent.

*Parabola located at one of the sites of the Luzon microwave system. Built by Page Communication Engineers, Inc., for the U. S. Army Signal Corps, the new microwave system connects into the Pacific Scatter system. "Piggy-back" antennas appearing in the background are components of the trans-Pacific system.*

The microwave system, operating in the 7,125 to 7,750 megacycle band, was designed for Page by Collins and employs frequency diversity techniques.

The system initially will provide 31 channels transmitting voice frequency traffic channels from the Clark Air Base Communication Center to the station at STARCOM. Channels are also being provided for teleprinter connection into the Pacific Scatter System.

## SPEECH SOUND ANALYSIS

A COMPUTER to convert a set of numbers into a tape recording of the human voice, is being used by the Applied Research Laboratory of Sylvania Electric Products, Inc., a subsidiary of General Telephone & Electronics Corp.

The program is directed toward proving the effectiveness of a method of speech sound analysis being developed by the laboratory for the Rome Air Development Center, Griffiss Air Force Base, Rome, N. Y.

Object of the "speech analyzer-synthesizer" program is to determine the feasibility of a more efficient way of mapping speech for use in automatic speech recognition systems, according to Dr. James E. Storer, acting director of the Applied Research Laboratory.

Speech sound analysis is the first step in the development of any automatic speech recognition. The research is being performed as a part of continuing work in the laboratory's information processing department under the direction of Dr. Donald B. Brick.

Contemplated applications of such systems include voice-operated typewriters, voice programming of computers, voice dialing of telephones and voice-routing of mail in post offices.

Automatic speech recognition is essentially translation of human speech to a mechanistic language that can be operated upon by a computer or used to control a machine, Dr. Brick said. For this reason, it is anticipated that this process can be successfully reversed, permitting translation of the machine language back into human speech.

Harold J. Manley, project engineer, is testing the speech sound analysis method by introducing a tape recording of the human voice into a digital computer where the sounds are first mathematically analyzed and then re-synthesized from

the resulting numbers on a sound recording.

At the conclusion of the program, Mr. Manley will demonstrate the method to the Air Force by playing the two recordings in turn. The fidelity of the synthesized recording to the original will be a measure of the project's success.

The Air Force award is the outgrowth of an extended Sylvania research program in speech recognition. Mr. Manley's proposed method analyzes the wave forms that comprise speech in terms of a fixed set of orthonormal (uncorrelated) functions, chosen to resemble sound wave forms that occur naturally in speech.

All sounds are represented as the sum of the same 30-odd orthonormal functions, with only the coefficients of the functions changing for different sounds, Mr. Manley said. An infinity of functions would be required to simulate perfectly the countless variations that occur in actual speech, he noted, but the set of approximately 30 functions should result in sufficient fidelity for most purposes.

Results of the speech analyzer-synthesizer program may have additional application in the compression of speech for transmission over narrower band-width communication channels through improvement of the naturalness of voice reproduction, according to Mr. Manley.

## WESCON MEETING TO BE HELD

THE 1961 Western Electronic Show and Convention is to be held in San Francisco Aug. 21 to 25. It is expected to attract an estimated 35,000 engineers and management people in the electronics industry.

Over 100 formal papers are to be presented on the latest technological developments by some of the nation's leading engineers and technical staffs. Several papers will be presented on coherent optical emission, including the ruby optical maser as an amplifier and as a generator. In one of the sessions, Colidar, a coherent light radar, will be set up and demonstrated. Other sessions will cover such subjects as information theory and computers, new microwave electron devices, solid state devices, antennas, and propagation studies for new communications techniques.

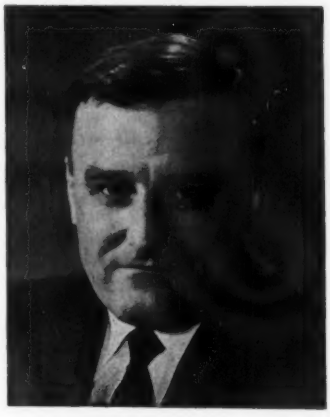
Papers providing information of interest to readers of TELEPHONY will be discussed in these columns.


*Advertisement*

# How To Get Your Money's Worth From Electronic Equipment!

THE TELEPHONE industry is rapidly taking advantage of new developments in electronics. This is only natural. Since the telephone first came into existence, telephone men have been quick to recognize the value of new developments.

Thus it is not surprising that the industry is using more and more electronic equipment. Mobile radio is used to connect telephones in cars, trucks and other vehicles. Microwave relay links are used in place of wire and cable in many places. Electronic carrier



**Carl E. Smith, E. E., President Cleveland Institute of Electronics**

circuits and repeaters result in better utilization of existing (and proposed) facilities.

All of these improvements are available today. Tomorrow will see even greater advances. The manufacturers of telephone equipment can be relied upon to give you the kind of equipment you need to fulfill your obligations to your subscribers.

However, you should keep in mind a fundamental principle of management . . . a chain is only as strong as its weakest link. Thus, no matter how big or small you may be, your equipment will not give maximum performance unless it is maintained by competent technicians.

Every company has a technical staff. It may consist of hundreds or perhaps thousands of men . . . or there may be only two or three. These men know and understand telephone technology as it used to be, but in all honesty, do they understand the fundamentals of electronic circuitry?

If they aren't on speaking terms with oscillators . . . rectifiers . . . amplifiers . . . transistors . . . etc., they are not going to be able to give you the technical support you need. A man may be able to wire a central office switchboard in the dark, but if he isn't skilled in the mental tools of electronics, your new equipment will not give you the service you paid for.

In all probability your present staff is very capable. You wouldn't have one which didn't give you the reliability you must have. Therefore they are the logical men to take on the maintenance of electronic equipment . . . as soon as they have received a sound foundation of electronic fundamentals.

This can be done economically and without the loss of valuable man hours by a non-resident training program. Several schools offer this service. They teach your men the fundamentals of electronic circuits. Then, with the ability to understand the principles of any electronic device, your company and the equipment manufacturer have only to conduct a brief orientation of the specialized equipment.

This plan has been used successfully by many companies. It has helped them . . . and it can help you. It will pay you to investigate and get the facts.

For full information on schools providing training in electronic theory and FCC license preparation, write to the National Home Study Council, 1420 New York Avenue, N. W., Washington 5, D. C.

If you would like the details on our Employers Plan for training technical personnel, write to

THE REGISTRAR
CLEVELAND INSTITUTE OF ELECTRONICS
1776 E. 17TH ST., DESK TE-60
CLEVELAND 14, OHIO

# MINIATURE RINGER

## Helps You Sell Compact Phones

Here's a new ringer box designed by AE engineers to help you sell more compact phones. Now you can sell the Starlite* or Space-Maker* phone as a main line or as a ringing extension. Because it's smaller, this box is easy to keep out of sight. It's less conspicuous even when wall-mounted. And, it comes in 10 colors to blend into any decor.

The miniature ringer box measures just 5¼" by 5¼" by 2 1/16" deep. Available in a full range of frequencies, both harmonic and decimonic. As a result, you offer the convenience of miniature design *plus* big-ringer quality...a combination that's sure to increase the use of compact phones in your community. See your AE representative for complete details.

*STARLITE and SPACE-MAKER are trademarks of Automatic Electric Co.

**SOLD.** **ONE STARLITE.** As a main line, the Starlite requires a ringer. The trim design of our miniature ringer box complements the beauty of Starlite...even to the matching color.

**SOLD.** **ONE SPACE-MAKER** extension phone. For the customer who insists on a ringing extension, our miniature ringer box is the answer. It complements the practical design of Space-Maker.

AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

# MARKETING
## Makes Money

*By R. PARKER SULLIVAN**

**Part I**

MOST OF THE people in the telephone industry with whom I have visited about "marketing" seem to be of the opinion that the only way they can make money from a marketing effort is through an increase in the sale of their products or services. I find myself in complete agreement with the premise that increased profits through increased sales is one of the primary objectives of any marketing effort. However, I am firmly convinced that this is only one of the many sources of improving profits through good marketing.

There are many areas in our present operations that can produce a greater contribution to profit as a result of a complete understanding and acceptance of good, sound marketing principles. In essence, I'm simply saying that selling is not marketing, nor is marketing just selling. Marketing is much more than selling and if we hope to realize a major portion of the profit potential that marketing holds for us, we are going to have to develop and accept a meaning of marketing that is much broader than just selling.

### *Interpretation Needed*

What we need for this job is not just a definition, but rather an interpretation of the real meaning and application that the term marketing has, or at least should have, for the owners, managers and employes of operating telephone companies. Let's attempt to tailor "marketing" to fit our business. If we're successful in this effort we will have a comprehensive understanding of it, how it can be made to work for us in all areas, in all departments, and on all jobs. It may then be possible for each of us to develop a specific plan of operation to institute these principles in our company and to realize the tremendous benefits that marketing offers to us.

As a result of working directly with the development of a marketing plan for the General Telephone System during the past few years, I have come to apply the following meaning to the term marketing, and I would like to present it for your consideration, as I believe it may help to form a better understanding of this somewhat nebulous and often misused term:

MARKETING IS AN *ATTITUDE* TOWARD THE CONDUCT OF OUR BUSINESS THAT RECOGNIZES THAT ONLY THROUGH COMPLETE CUSTOMER SATISFACTION CAN WE REALIZE OUR MAXIMUM PROFIT POTENTIAL.

R. P. SULLIVAN

### *Appropriate in All Business*

Another way of expressing this might be to say that we can anticipate realizing that portion of our profit potential in relationship to the degree of customer satisfaction that we create or that we enjoy. This broad meaning of marketing is, in my opinion, most appropriate in any business, for it is through customer satisfaction that we effectively meet and beat competition.

However, this meaning is even more appropriate to the telephone business, for we find ourselves doing business as a regulated industry and yet facing increasingly stiff competition, not only for the sale of additional products and services, but to maintain our present share of the consumers' discretionary income. We all realize that customer satisfaction plays a significant part in obtaining adequate rates.

We are equally cognizant of the im-

*(Continued on page 54)*

*Mr. Sullivan is Vice President-Marketing and Sales of General Telephone & Electronics Corp., New York City.

# A Letter From Dusseldorf, Germany

***Joel Ewen*, Telephony's *European correspondent, visits one of Germany's most modern and attractive PABX installations.***

Düsseldorf, Germany
June 5, 1961

Dear TELEPHONY Readers:

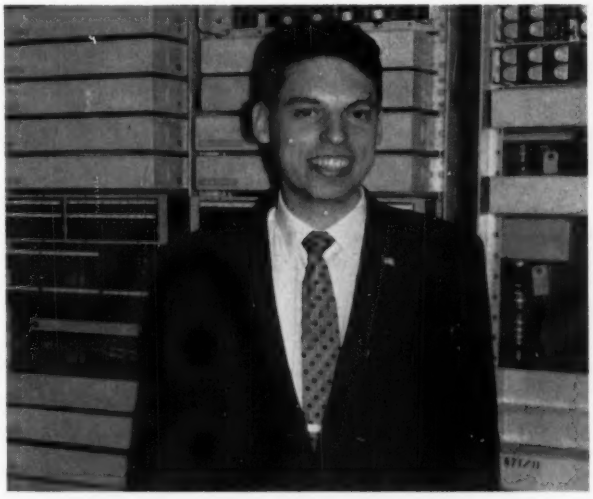
I have just visited what is probably the most modern and attractive PABX installation in Germany. After arriving in Düsseldorf at 9 a.m. on Saturday, I took a taxi to the city's newest and tallest building, the 26 story "Thyssenhaus," headquarters of the Phoenix Rheinrohr Co. I was met at the entrance by Phoenix Rheinrohr's wire chief who conducted me to his office on the mezzanine, where a briefing was held.

The PABX serving Germany's leading pipe manufacturer, has 1,300 extensions and 148 central office trunks, 60 of which are assigned to incoming calls. The PABX is arranged for inward dialing, and extensions may be reached directly from the outside by dialing 824 plus the four-digit extension number. The same trunks are used to reach the PABX attendant when the caller dials 824-1. The operator may then pass the call to the proper extension by dialing the extension number.

Of the remaining 88 trunks, 30 are assigned for outgoing local calls and contain toll restrictors. Forty-eight trunks are reserved for outgoing toll calls over the German subscriber toll dialing network, and the other 10 are used for toll calls which must be handled manually at the toll office. Toll calls, of course, must pass through the PABX switchboard.

From the corridor on the mezzanine, I could see the operating room through the glass wall, and at our host's suggestion we proceeded to inspect the attendant's switchboard. The operating room was, without a doubt, one of the most beautifully decorated that I have ever seen. The columns supporting the building are painted turquoise blue. Fluorescent lights, recessed in the aluminum sound-proofed ceiling, provided flat even lighting throughout the room. Potted plants evenly spaced, gave the room a warm appearance.

The modernistic 16-position switchboard was designed by the building's architect and custom-built by the equipment manufacturer. The boards were supported on four ten-inch steel pipes, which also served to conceal the switchboard cables run in from the equipment room on the floor below. Four of the 16 positions are used for incoming calls. Since this PABX has direct inward dialing, only calls requiring assistance come to the attendant.



*The author in the PABX equipment room.*

As it was Saturday, there was only one operator on duty. While we watched, a call came in. The first indication that we or the attendant had, was when the loudspeaker at the position announced "Phoenix Rheinrohr." When a call comes in, it is automatically routed to a free position and a record answers in the company name. The operator had no choice as to whether she should take the call or not. The call was there and had to be handled.

After the announcement, the caller replied: "I would like to speak to Herr Schmitt." The attendant keyed Mr. Schmitt's extension number into the equipment, and in so doing a recorded announcement said: "One moment please, I'll connect you." Had the extension been free, the call would have been automatically disconnected from the attendant and completed in the usual manner. But such was not the case, and the loudspeaker gave forth: "The line is busy, will you wait?" The caller answered in the affirmative, and the attendant pressed a button which put the call in storage, at the same time releasing her to handle another call. As soon as Mr. Schmitt finishes his present

conversation, he will be automatically connected to the waiting caller.

Had the caller not wanted to wait, the attendant would have pressed the disconnect button. During the whole process, the attendant did not have to say a word, the entire conversation being handled by a record. In addition, the attendant has 10 pushbuttons in front of her to provide other commonly used phrases, she might need, such as: "Please repeat" - "Yes" - "No" - "Thank you" - "Good Bye."

Since most of the time the operators have very little to say, the positions are provided with handsets instead of headsets. When the operator must speak to the caller as sometimes occurs, lifting the handset cuts out the loudspeaker. During the busy hours, the girls may don headsets, but even when traffic is heavy, the operating room is very quiet.

Each of the positions, outgoing as well as incoming, is provided with busy lamps for the 200 most important extensions, and serve to inform the operators of the condition of each. To avoid heavy current drain, the lamps only light when the attendant presses a button. Each of the incoming positions contains buttons and lamps for 40 of the 60 incoming trunks to permit the attendants to enter the line if the extension flashes, or to handle calls if the automatic answering equipment fails. Each position also contains a clock, keysender, and as insurance against failure of the keysender, a dial. One of the incoming positions is also the night position, and contains buttons, lamps and call registers for 10 outgoing trunks. It also contains appearances of the 10 attendant's lines for booking long distance calls, and five internal information lines.

Moving down to the other end of the switchboard line, we came to the outgoing positions. Although they were unattended, we were able to obtain an idea of their operation. Positions 1 to 6 handle outgoing toll calls over the subscriber toll dialing network and 48 outgoing trunks are assigned for this traffic. Each of the attendants has 10 attendant's lines appearing in front of her, and an extension user desiring to make a long distance call, dials "68" and comes in on one of these lines. The attendant takes down the required information on a toll ticket and the extension user hangs up.

Pressing the trunk button of one of the 10 trunks appearing in front of her, the operator proceeds to place the call. If the town which she is calling is one of the 10 most frequently called, she will have in front of her an automatic dialing button, which when pressed, automatically dials the complete four-digit city code. The operator need then only key the local telephone number. When the called party answers, the attendant keys the extension number into the trunk circuit, and both parties are connected together. The call register records the message units, and upon completion of the call the charges are entered on the ticket. The register is then reset to zero.

Positions 7 and 8 are for booking toll calls and contain the attendant's lines only. During the busy hours, calls are booked at these positions and the tickets are then passed to positions 1 to 6. Positions 9 and 10 are assigned to toll calls which cannot be dialed but must be handled by a toll operator. There are 10 outgoing trunks reserved for this purpose, and both operators have access to all 10. Placing a toll call through these operators is similar to placing one through the operators at Positions 1 to 6.

Twenty employes have direct access to the booking operators with multiple appearances at the two manual toll positions and the service observing position. To reach an attendant, the executive presses the transfer button on his telephone without lifting the handset. This causes his direct

*Modern and attractive Phoenix Rheinrohr switchboard. Cables are concealed in the pipes which support the boards.*

access lamp at the switchboard to flash. When the attendant answers, his telephone is rung. He then picks up the receiver and speaks to her. The attendant need only press the appropriate direct access button without dialing any numbers. The executive's telephone rings, and when he answers, they may converse in the usual manner.

Position 15 is a supervisory position and contains appearances of the 10 attendant's lines, five information lines and the direct access buttons. In addition there are 14 buttons and lamps to permit observation and monitoring of the operating positions. Two chief operator lines permit the position to be dialed directly, the code being 69. Two extension lines, which may be reached only over a special trunk connector also appear at the chief operator's position. When any operator has difficulty with a trunk call, she may pass it to the supervisor by keying this special extension number, in the same manner as on an ordinary call. After the supervisor has taken care of the problem, she may transfer the call to the desired extension, in the same manner a regular extension transfers an outside call.

Just as these extension lines only appear at the trunk connectors, so do the three classes of attendant's lines: Long distance booking (68), chief operator (69) and information (60) only appear at the bank multiple of the local second selectors. The two special extension numbers contain only three digits as the operators' toll connector is connected to a level at the first trunk selector instead of the second. This special number also permits certain outside parties to reach the chief operator in an emergency.

There are three classes of extensions at Phoenix-Rheinrohr, non-restricted, semi-restricted and fully restricted. The non-restricted and semi-restricted extensions may make and receive outside calls. Toll restrictors prevent them from entering the toll dialing network as well as dialing other special numbers such as time, movie programs, lottery results, etc. However, 50 key employes are exempt from these restrictions, and the toll restrictors do not function during their calls. But their lines are equipped with message registers so that all stations may be properly charged for toll calls.

The non-restricted extension user dials "9" and immediately seizes an outside line. Positions 1, 3 and 5 each contain buttons and lamps, but not call registers for 10 of the 30 local outgoing trunks. When a semi-restricted extension user dials "9" to obtain an outside line, he seizes a trunk circuit, but is not connected through to the outside.

The trunk lamp flashes at one of these positions, and when the attendant answers, he requests an outside line. The operator may connect him through by pressing a button, or may dial the number herself, and then connect him through. Fully restricted extensions may neither make nor receive outside calls, but may make tie line calls. The class of service is determined by the strapping arrangement of each line circuit.

With our inspection of the operating room completed, we descended a staircase to the equipment room on the floor below. The equipment room is located next to the lobby, and occupies a large portion of the ground floor. The choice of location is rather unusual, as most firms hide their telephone equipment in the basement or in a locked room on an upper floor. But the Phoenix exchange may be viewed by passers-by in the street through the large glass windows, or by visitors in the lobby through the glass walls.

Located near the windows are the main distributing frame, six rows of equipment racks and the power equipment, while across the main aisle are 22 rows of bays containing the actual switching equipment. Unlike American-made telephone bays which are floor-supported and fastened at the top to the superstructure, German bays mount a foot off the floor on a frame which extends the length of the entire row. The bays are easily lifted in place, and the top and bottom are clamped to the horizontal members.

It is a very simple matter to relocate a bay, or to shift it over to make way for other equipment. The standard rack height for most installations is about 8½ feet, but the widths of the racks depend only on the space requirements of the equipment they contain. Racks of several widths are employed, and the row frame will accommodate them without any special preparation. The cable racks for the equipment rows mount directly on the row frames and become an integral part of them.

The first eight rows contain line switch and connector bays for the 1,300 extensions. Each row contains two bays equipped with 100-line and cutoff and 100 12-point rotary line switches. When an extension user lifts the handset of his telephone to make a call, the lineswitch assigned to his line searches over 10 outlets for a free first selector. When one is found, dial tone is returned. If all 10 first selectors to which he has access are busy, the stepping switch moves to the 11th step and busy tone is sent out. The 12th step is the home position. The grading scheme ensures that the extension user will obtain a first selector almost all the time.

Alongside the lineswitch bays are the associated connector bays. This PABX is different in that there are two sets of switch trains, one for internal calls and one for trunk calls, and, thus, there are two connector bays for every hundred lines. Each bay may contain 18 square-motion connector switches. The switches are very compact and mount one above the other. The contact banks are multipled by ribbon cables which provide a very neat appearance, and make the contact bank terminals accessible from the rear without disturbing the multiple. The associated connector relays mount alongside the switch, but as a separate plug-in unit. Since the switch is of the up-around-down-and-back type, there is no release magnet. At the end of a call, the wipers continue to the end of the level or 12th step, where they drop down and are rotated back to normal by a spring.

The next seven rows of equipment include six rows of first and second internal, trunk and tie-line selectors, and an intermediate distributing frame. The selector bays are much narrower than the line-switch and connector, as the circuit requires less relays; in fact 10 selector bays occupy as much space as six lineswitch or connector bays. The selector switch is identical to the connector switch we just

*View of PABX equipment room. Notice how equipment bays are supported by row frames.*

saw. However, since only a few relays are required, their mounting plate is attached directly to the frame of the selector switch, making it one plug-in unit instead of two.

The IDF is located between the rows of first selector and second selector racks and is used for grading the selector outlets. The IDF terminal strips mount on racks containing five verticals, which mount in the row frames the same as equipment bays. The bank multipling is so arranged that different groups of extensions have access to different combinations of tie lines.

Speaking of tie-lines, this PABX is a tandem point of a large tie-line network. The PABXs of four factories and another company in Düsseldorf tie in with this exchange. Then there is a set of tie-lines to a plant in Mülheim, which is also a tandem exchange for the PABXs of five factories nearby. To get from one of the smaller PABXs in the Düsseldorf area to one in the Mülheim area, it is first necessary to dial the access code for this building, which brings the caller in on an incoming tie-line selector. The next digit routes the call out over a tie-line to Mülheim, and a third digit brings it to the desired PABX. The extension number follows. The number of digits dialed depends on the number of exchanges to be traversed. The set of tie-lines to the other company in Düsseldorf is only accessible to extensions in this building, and may not be reached over other tie-lines.

Continuing our inspection of the equipment room, we came to the next row which contains a distributing frame for connecting the attendant's positions to the various circuits. It is located directly below the switchboard, and cables run right into the ceiling and into the pipes which support the boards. The other six rows of equipment bays on this side of the main aisle contain trunk units, toll restrictors, keysender units, and transfer line circuits.

Each trunk has a transfer lineswitch and line and cutoff relays, just as each telephone has an extension line circuit and lineswitch. When an extension user desires to transfer an outside call, he presses the transfer button which places ground on the tip wire. This operates a relay in the trunk circuit which transfers the extension from the outside line to the transfer line, at the same time holding the trunk. The transfer line is just like a regular extension line, and the rotary lineswitch seizes a free first selector. Dial tone is returned and the number of the new extension is dialed. When the called party answers, he is advised of the outside call. The transfer line circuit marks the selector and con-

nector outlets over the fourth wire. The first extension user hangs up and the trunk selectors and connector of the original connection release and then automatically step to the marked outlet which belongs to the new extension. Then the transfer line is released, releasing the link circuit. The transfer has been completed, and the trunk is connected to the new extension.

Crossing the main aisle, we passed the row of power equipment and came to the automatic answering machines. Four of these interesting machines mount in one bay, one for each of the incoming operator's positions. Each machine contains a record with 20 grooves for 20 possible phrases. Four sets of five pickup heads mounted 90 inches apart—transmit the message to the operator's position. Each time the switching equipment or the attendant activates the machine, the disc makes one revolution and stops. The maximum length of any message is four seconds, or one revolution. In addition to the answering machines for the incoming positions, this PABX has its own time announcer, which is reached from most extensions by dialing "2."

Another interesting device with which this exchange is equipped, is a ticketing machine. The wire chief demonstrated its use. He had the machine patched to a line circuit at the MDF. Then he made a long distance call from his extension. The machine recorded the area code, called number, date and time of day, and length of the call, and printed it on a paper tape. The ticketing machine is used to check up on the calls of the various extensions.

At the conclusion of our tour of the Phoenix Rheinrohr PABX, our attention was drawn to the interbay cabling. German installers are very neat in their installations, and this extends to the cables on the cable racks. All the cables are neatly formed and sewn together on the racks. The cables are carefully bent at corners, and the radius of the bend is painstakingly checked. Not only that, the installation supervisor spends days planning the running of the cables, so that all remain parallel to each other throughout the entire run. This exchange, with 153 bays of equipment and three distributing frames, does not have one cable crossing over another on the same rack! We thanked our host for the excellent tour of this interesting and unusual private automatic branch exchange.

After my visit to the PABX, I decided to pay a call to the Post and learn more about the rules and regulations governing these exchanges, because as I may have mentioned, Phoenix Rheinrohr owns its PABX outright, having purchased it direct from the manufacturer. In Germany, as in many other European countries, business firms may purchase or rent their PABXs direct from the manufacturer as well as from the Post.

This practice in Germany goes back to the beginning of the century when manufacturers were offering various types of equipment. The Post decided to permit the manufacturers to sell direct to the customer. In addition, they felt that the customer's individual problems could best be handled at the source, the manufacturer.

In 1940, one year after the start of World War II, the German Post set down a number of rules for PABXs. One of the rules specified the sizes of PABXs to be offered, giving each size a designation. As an example, a IID PABX contains 25 extension circuits, five trunks and four links. All manufacturers must adhere to these standard sizes. The new rules also specified the features each PABX must contain, but manufacturers may provide additional features if desired. Any manufacturer may supply the German market using his own circuit techniques, but each PABX must meet the requirements of the Post, and be tested and approved by them. In addition, circuit drawings and descriptions must follow standard practice.

With the residence service I receive from the Post, I cannot buy and connect my own telephone set. Neither can I add my own instrument as an extension. However, if I wish to have a PABX, then I may purchase or rent direct from the factory. And for this purpose, the smallest PABX which the Post recognizes is a system consisting of one main station, and one PABX extension. From thereon up, there is a PABX for every pocketbook.

The firm which rents or purchases their exchange privately is obligated to maintain it in good condition. If they don't, the Post may disconnect the trunks. Maintenance is usually performed by the manufacturer, who has a service organization in every large city. However, as we saw, Phoenix Rheinrohr has its own maintenance staff consisting of the wire chief and four assistants. In order to employ its own maintenance staff, Phoenix must obtain a certificate from the Post in the wire chief's name, and he must meet certain requirements for education and experience in the telephone field. Only one person in a firm needs a certificate, and this person is then responsible for the performance of his associates.

With this arrangement the Post receives $3.00 a month for each PABX trunk which is the same rate as for a business or residence telephone. In addition, the Post receives 20 cents a month per extension, but only for extensions which have access to the trunks. For the tie-lines they receive $3.00 a mile rental, plus a flat charge of $3.75 per month to make up for lost revenues when the public network is by-passed. Firms may own their own tie-lines, but they are still liable for the flat charge. However, tie-lines connecting the PABXs of two different companies must be rented from the Post.

You may be interested in learning the Post's rates for a typical PABX, and comparing them with the rates in the United States. The Post sells the IID PABX mentioned previously and consisting of 25 extensions, five trunks and four links, for $1,735. If the purchaser also wishes to obtain maintenance service from the Post, he pays $12.42 a month. If he wishes to rent instead of buy, he pays three times the monthly maintenance charge, or $37.27. These charges are in addition to the $3.00 a month for each trunk, and 20 cents per extension. The PABX of one main station and one extension sells for $91 or rents for $2.00 a month. When the customer orders a system from the Post, he may specify which manufacturer is to supply it.

As we have seen, German PABX systems contain many features not found in American systems, and the rules and regulations concerning their use are completely different from ours. I leave it to you to evaluate the advantages of the American and German methods.

Sincerely yours,
Joel J. Ewen

## Power for Growth

"Whether one realizes it or not, advertising is perhaps the most wonderful development of the modern commercial age. It is the maker or breaker of business, big or little. It is the one factor of successful sales that is most apt to be overlooked by the merchants and businessmen of small towns and cities. "Advertising is . . . the power that will make little concerns grow into larger success. It is a science that requires study and be it said, character. It cannot succeed if it is based upon untruth; it must build upon faith and integrity." — Richland (La.) *Beacon-News*.

# The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

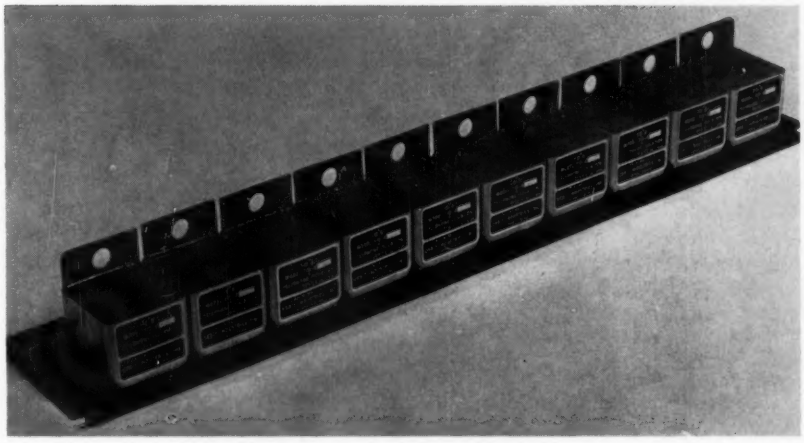
THE RECENTLY developed bridged tap isolator is proving convenient and economical for terminating circuits where central office equipment fill is desired.

In many exchange areas, up-grading and down-grading of subscriber service, community growth, and plant expansion, present central office termination problems where party line service is required.

In a recent field trial installation of the Orbit Industries' bridged tap isolator, reported by International Teletronics, Inc., four subscribers were served on a four-party line basis. Because of a complete fill of the party line facilities in their respective areas, it is often necessary to provide each subscriber with private line service. A problem in this case was whether to provide central office relay terminal equipment or to provide the same type service using bridged tap isolators.

It was decided to install Diode type bridged tap isolators, which make it possible to connect all four parties on one central office equipment without any transmission impairment. The related installed cost of providing party line service by use of bridged tap isolators was found to be considerably less than providing extra central office termination on a party line basis with reduced fill. Various assemblies of bridged tap isolators are available for example, individually, either pedestal or pole-mounted or assemblies of five or 10 suitable for 19-inch rack or MDF mounting.

It is important to note that these isolation units are recoverable and may be reused on other circuits or installations, as required. In the field trial, it was anticipated, because of the convenient and economical approach, that a number of the multiple bridged tap isolator rack units would be installed at the central office. These were requested to accommodate party line fills as well as transmission improvement on other bridged tap uses such as secretarial service, office-premise extensions and half-tap cut-overs.



**Bridged tap isolators on 19-inch rack.**

Also in the field trial case, four cable pairs, each servicing a single subscriber were combined at the central office to provide the party line service which was desired by the subscribers. The isolation devices eliminated the transmission losses common to this type of bridged tap. The four cable pairs involved in the field test had the following composition:

Cable Pair No. 1, 8 KF No. 22 ga. and 8 KF No. 24 ga.
Cable Pair No. 2, 13 KF No. 24 ga.
Cable Pair No. 3, 10 KF No. 24 ga. and 4 KF No. 22 ga.

*(Continued on page 58)*

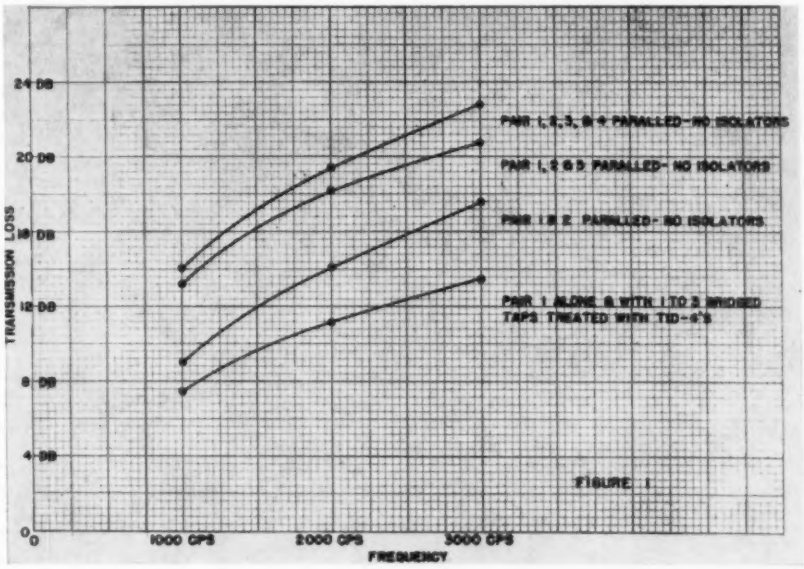



Fig. 1

# Courts and Commissions

## Approve Sale in Oregon; Authorize Bond Issue

The Oregon Public Utility Commissioner on July 17 approved the sale of the Dayton Telephone Co. to the Sunnyside Telephone Co.

Dayton serves 690 subscribers in an area contiguous to Sunnyside's Lafayette exchange. Sunnyside serves 1,400 subscribers.

Under the terms of the approved agreement, Dayton will receive up to 62,000 shares of Sunnyside's common capital stock for its assets and liabilities.

The Dayton company presently provides common battery and magneto service. Sunnyside plans, immediately upon acquisition of the property, to proceed with a conversion program. Sunnyside will combine its Yamhill and Lafayette exchanges with the Dayton exchanges.

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Also on July 17, the commissioner authorized the West Coast Telephone Co., Everett, Wash. to issue and sell 4 million dollars worth of 5 per cent first mortgage bonds (TELEPHONY, July 1).

The bonds are to be sold to six insurance companies.

The company's capital ratios, as of Mar. 31, 1961, and pro forma after giving effect to the bond issue, are as follows:

| | *Mar. 31, 1961* | *Pro Forma* |
|---|---|---|
| Bonds ..... | 37.6 per cent | 41.1 per cent |
| Debentures .... | 7.6 | 7.0 |
| Preferred stock ..... | 14.3 | 13.5 |
| Common equity. | 40.6 | 38.4 |
| | 100.0 | 100.0 |

Money obtained from the sale of the bonds is to be used for expansion, construction and improvement.

## NW Bell Takes Commission Service Order to Neb. Court

The Northwestern Bell Telephone Co. and the Public Telephone Co., Oconto, filed an appeal with the Nebraska Supreme Court on July 14, contesting a ruling of the Nebraska Railway Commission on Mar. 8, in which telephone users in the vicinity of Eddyville, Cozad, Oconto and Lexington were given permission to obtain service from "any operating company of their choice operating within the area" (TELEPHONY, Mar. 25).

The users, all switching subscribers on the Eddyville, Cozad and Oconto exchanges, had claimed that their lines had become inoperative through lack of maintenance and that they were not receiving reasonably adequate service.

The brief filed by the protestants points out that the commission had first denied the application, but after an appeal had set aside the denial and granted the application.

The Public company states that lack of service was due to the users' own neglect and that the company had volunteered to assist with rehabilitation work.

The Northwestern Bell company maintained that the users in question were not within their operating territory.

The brief further asserted that the commission had erred in finding it in the public interest to permit users to obtain telephone service from the company of their choice. It pointed out that such a practice would result in added costs and duplication of service in the affected areas.

## Authorize EAS with Bell, Also OK Withdrawal EAS Bid

The Illinois Commerce Commission, it was reported on July 21, has authorized the General Telephone Co. of Illinois to add extended area service between its Kirkwood and Monmouth exchanges, and one-way extended area service between its Washington exchange, and the Peoria exchange of Illinois Bell Telephone Co.

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The commission also granted permission to the General company to withdraw its application to establish one-way extended area service between its Morton exchange and the Peoria exchange of Illinois Bell (TELEPHONY, July 1).

## United System Purchases, Plans Merger for Ind. Corp.

United Utilities, Inc., has announced the purchase of Bremen (Ind.) Telephone Corp. The acquisition was made through an exchange of stock, and present plans call for the Bremen property to be merged into United Telephone Co. of Indiana, Inc., a United System subsidiary, within the next few months.

Serving approximately 1,800 telephones in its operating area, the Bremen exchange has been dial-operated since 1950. Nation-wide customer toll dialing was established last year.

The original Bremen Telephone Co. was founded in 1899, and has been owned and operated by successive members of the Koontz family until its recent acquisition by United Utilities, Inc. Mrs. Ruth I. Wood, principal stockholder, was president at the time of its change of ownership. Other stockholders were James M. Koontz, vice president and general manager; Jane B. Miller; and Mary Catherine Hinkle.

The acquisition will increase United Telephone Co. of Indiana, Inc., to more than 85,000 telephones in its 79 exchanges. The United System presently serves approximately a half million telephones in its 15-state operation.

## Minn. Cooperative Gets Raises at Five Exchanges

The Federated Telephone Cooperative, Chokio, was granted a rate increase on July 10 by the Minnesota Railroad & Warehouse Commission. The cooperative serves 1,468 company-owned stations and four switch-line stations through dial exchanges at Chokio, Odessa, Correll, Holloway and Danvers.

The last rate increase the company received was in 1955. In the current proceeding the commission determined that the cost of "labor and materials has increased to the point that applicant (Federated cooperative) no longer receives a fair return upon the investment in plant required to render service to the public."

The commission also pointed out that the farm economy in the area has de-

clined to the point that fewer subscribers are receiving service from Federated than was projected at the time of the 1955 rate proceeding. Of the total number of stations served, 1,023 are rural.

Under new rates, which were scheduled to go into effect after July 31, the company will have a net income of $22,-309, which will give it a rate of return of 2.51 per cent on its current value rate base of $888,736. Under old rates, the company had a net income of $6,-685 and earned .75 per cent on its rate base.

Present and approved rates are as follows:

| | *Present* | *Approved* |
|---|---|---|
| *Holloway, Correll, calling range 751 to 1,250 stations* | | |
| One-party business .... | $8.50 | $9.50 |
| Two-party business ... | 7.25 | 8.25 |
| Multi-party rural business ..... | 6.50 | 7.50 |
| One-party residence ... | 4.75 | 5.75 |
| Two-party residence .. | 4.25 | 5.25 |
| Four-party residence .. | 3.75 | 4.75 |
| Multi-party rural residence ..... | 4.25 | 5.25 |
| *Odessa, Danvers, Appleton switchers*, Chokio*** | | |
| One-party business .... | 8.75 | 10.00 |
| Two-party business ... | 7.50 | 8.75 |
| Multi-party rural business ..... | 6.75 | 8.00 |
| One-party residence ... | 5.00 | 6.25 |
| Two-party residence .. | 4.50 | 5.75 |
| Four-party residence .. | 4.00 | 5.25 |
| Multi-party rural residence ..... | 4.50 | 5.75 |

*Approved rates for Appleton switchers are 25 cents less than rates shown for each class of service.

**Present rates for Chokio are 25 cents more than rates shown for each class of service.

Odessa and Danvers have been reclassified from the 1,251 to 2,000 station calling range (Group C) to the 2,001 to 2,750 station calling range, (Group D) joining Chokio. Appleton switchers remain in Group C.

## SW Bell Files Tariff in Ark. For Pay TV Network

Contingent on authorization by The Arkansas Public Service Commission, Southwestern Bell Telephone Co. is prepared to construct a pay television distribution network at Little Rock, for the use of Midwest Video Corp.

The Arkansas commission held hearings on the pay television plan in May and June. During these hearings, Southwestern Bell on June 19 filed a proposed tariff setting out rates and regulations under which it would provide the transmission facilities if the commission determines it would be in the public interest.

Under this tariff, charge for a three-channel coaxial cable system would be $2,000 a month for the first 10 miles and $28 monthly for each additional one-fourth mile. There would be a $20 construction charge for the lead to each pay TV customer's home and a 35 cent monthly charge for each of these connections.

The tariff includes a 10-year termination charge to cover construction costs and a provision for the posting of a bond or suitable security by Midwest Video to cover Southwestern Bell's capital investment in the transmission equipment.

During the hearing, Warren E. Bray, Southwestern Bell vice president and general manager for Arkansas, stressed that Southwestern Bell takes no position on whether pay television should be put in operation. However, he said, the telephone company is in the best position to provide the needed transmission facilities if the commission determines this service should be furnished.

If the Arkansas commission rules that pay TV is in the public interest and approves Southwestern Bell's proposed tariff, it will be the first tariff of this type in the United States. The only other cable pay television system now in operation is one that has been in service in a Toronto, Canada, suburb for the past 18 months.

Early this year, Midwest Video had asked the commission to require Southwestern Bell to furnish the transmission facilities for a pay television system in Little Rock.

In answer to Midwest Video's complaint, Southwestern Bell pointed out that it was not presently providing the type of service requested and had no tariffs for this service on file with the commission. Southwestern Bell said if the commission should determine that it would be in the public interest for such a service to be furnished, the company is willing and able to provide transmission facilities upon the approval of a tariff and after construction of the necessary facilities.

**Open house was held by the Wood County Telephone Co., Wisconsin Rapids, Wis. on June 29 to acquaint neighboring telephone operating companies with the advantages of participation in nation-wide Direct Distance Dialing. The Wood County company cut into service an automatic toll ticketing system recently, thus making it possible for telephone subscribers in the area to dial direct to more than 60 million telephones in the United States and Canada. Above, discussing the system (Left to Right) are: Richard H. Griebel, vice president and general manager, ITT-Kellogg; George A. Strichman, ITT-Kellogg president; and H. B. Flower, vice president and general manager, Wood County Telephone Co.**

## N. Y. Company Gets Raise For 5-Party Rural Service

The New York Public Service Commission on July 19 authorized Sylvan Lake Telephone Co., Inc., Hopewell Junction, to increase rates effective July 20 to subscribers receiving five-party rural service. Rates for other classes of service remain unchanged.

The company provides dial service to about 2,200 stations in and near Hopewell Junction, Arthursburg, Beekman, Billings, Brush, East Fishkill, Fishkill Plains, Green Haven, LaGrangeville, Stormville and Sylvan Lake.

In 1959, as the result of a canvass in which more than 75 per cent of its 10-party line rural subscribers indicated a desire for five-party service at higher rates, the company began a

plant improvement program which would make such service possible. Work completed so far has cost about $125,000.

Under the new tariff, which will produce about $6,200 additional annual revenue, rates to 995 rural residential subscribers who have been converted to five-party service will be increased as will those for 85 rural business subscribers similarly upgraded. Increases will apply later to the 445 subscribers still receiving 10-party rural service who are yet to be converted to five-party service.

## Ind. Bell Asks PSC to Fix Revenue With General of Ind.

Indiana Bell Telephone Company has invoked an additional section of the Indiana Public Service Commission statute in seeking the assistance of the commission in settling a dispute with General Telephone Co. of Indiana over division of message toll on interchanged calls (TELEPHONY, July 22). In filing a new petition July 14, Indiana Bell applied for commission action under the so-called division of revenues section of the law.

At the same time, Indiana Bell withdrew an essentially similar petition filed June 14. The earlier petition asked the commission to require General of Indiana to continue making payments to Indiana Bell from toll on interchanged calls, but did not specifically invoke the division of revenues section.

The new July 14 filing asks:

(1) A commission order "fixing a reasonable division" of revenues or "prescribing reasonable compensation for the existing physical connections between the telephone toll lines, toll facilities and telephone systems" of the two companies. Indiana Bell asked that such an order be issued, following "appropriate" hearings, if Indiana Bell and General are unable to reach an agreement on their own by Aug. 21.

(2) An immediate interim order from the commission requiring General to pay to Indiana Bell the sums already withheld from message tolls on interchanged calls, and directing General to continue such payments monthly on the basis of a 1956 agreement, until a new settlement is established. Indiana Bell asked that any new compensation arrangement—whether it be established by negotiations between the two companies or by order of the PSC—be retroactive to Apr. 1.

Indiana Bell also asked that the commission declare both the Charleston and Modified Phoenix plans "not applicable nor appropriate for use in determining the property, expenses and costs of General devoted to or incurred in the furnishing of intrastate telephone toll service with Indiana Bell." It sought a commission ruling that "certain local switching equipment, which General would classify as toll, is not used primarily for toll purposes and is, therefore, not assignable to toll,"

Indiana Bell said General's "proposed use, for settlement purposes, of the Charleston and Modified Phoenix Plans, and insistence on assignment of certain local switching equipment to toll, are improper, and settlement on such a basis would constitute an unlawful and unreasonable compensation to General . . ."

Under the division of revenues section and other portions of the Indiana Commission law, Indiana Bell argued, the commission has jurisdiction, both to order a final settlement and to require General, on an interim basis, to make monthly payments as prescribed by the terms of the 1956 agreement.

General has contended the commission had no authority to issue the continue-payments order as requested in Indiana Bell's first petition.

Indiana Bell negotiated settlements agreements with all Independent connecting companies in Indiana, except General, in 1959, and again this year. It has been unable to reach agreement with General since 1956, and General declared the 1956 contract terminated in 1959.

## Ore. Commissioner Approves Rate Raise for Estacada

Oregon Public Utility Commissioner Jonel Hill on July 18 ordered Estacada Telephone & Telegraph Co. to file a schedule of revised rates designed to produce $1,800 additional gross annual revenues (TELEPHONY, Mar. 26, 1960).

In March of last year, the company asked for a rate increase of $10,183.80. Commissioner Hill, however, after study of the petition, found a net operating income deficiency of $1,075.62 on an adopted rate base of $449,865.84 and an agreed rate of return of 3.6 per cent.

Estacada owns and operates a system of 1,325 stations, servicing the areas of Estacada, Spring Water, Eagle Creek, and Currinsville, and is engaged in modernization.

## Ask Authority to Borrow, Raise Rates in Arkansas

The Prairie Grove Telephone Co. applied on July 14 to the Arkansas Public Service Commission for authority to borrow money and to raise its rates.

The company seeks to borrow $150,000 from the Bankers National Life Insurance Co., Montclair, N. J. and to increase its annual revenues from $94,636.80 to $102,143.40.

The Prairie Grove company serves Prairie Grove, Lincoln, Farmington, Morrow, and Dutch Mills.

## FCC Denies WU Petition to Cancel AT&T Telpak Tariff

The Federal Communications Commission has denied a petition by The Western Union Telegraph Co. requesting that the American Telephone & Telegraph Co. be directed to withdraw and cancel its TELPAK tariff on 30 days notice and also denied a supplemental petition by Motorola, Inc., requesting similar action (TELEPHONY, Mar. 18; IN THE NATION'S CAPITOL, Mar. 25). The commission stated that, should AT&T file revisions to the tariff to alter its services along the lines specified by the petitioners, it might then consider whether such revisions should be suspended.

## Special Rates, Service OK; Sale, WATS Granted in Neb.

The Nebraska Railway Commission on July 12 issued the following orders:

The Northwestern Bell Telephone Co. was given permission to amend its tariff to provide that no installation charge would apply when one or more bell chimes were installed for residence service at the same time that other work is completed for which an installation, move or change charge applies.

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The Lincoln (Neb.) Telephone & Telegraph Co. was given authority to apply the following rates and charges for a special type of console lamp and key equipment to be used initially for air traffic control for both military and civilian flights at the Lincoln Air Force Base and the Lincoln Municipal Airport:

*Lamp and Key Station Equipment, System No. 3 (102-A)*

| | *Monthly Rate* | *Install. Charge* |
|---|---|---|
| Console key cabinet | $15.00 | $30.00 |
| Console face units, each | 9.00 | 10.00 |
| PBX or exchange line relay units, each | 3.75 | — |
| Private line relay units, each | 4.00 | — |
| Long line relay units, each | 6.00 | — |
| Flash start relay unit | 3.00 | — |
| Flash, ring & control relay units, each | 3.00 | — |
| Operators telephone & key units, each | 4.00 | — |
| Push-up relay units, each | 2.00 | — |
| Operator headsets, equipped with push-to-talk feature, each | .75 | — |
| Operator handpiece, equipped with push-to-talk feature, each | .75 | — |
| Interphone radio jacks, each | .25 | 1.50 |
| Power supply & common equipment | 75.00 | — |

•

Several companies, through the issuance of certificates of convenience and necessity, were given permission to

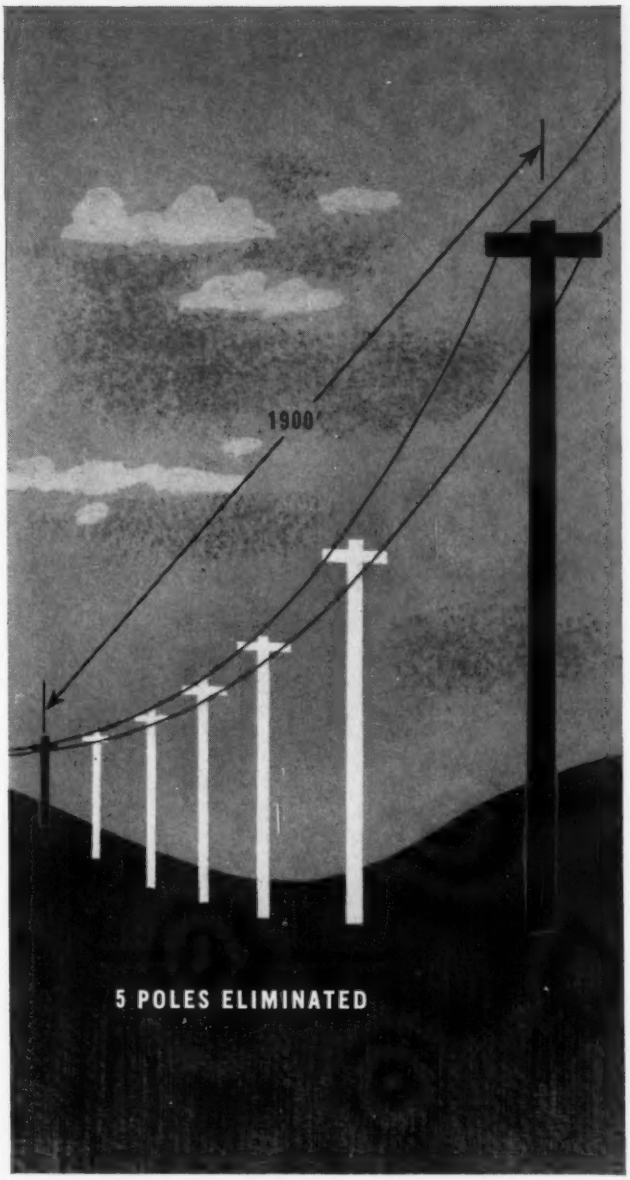
# NS Special 080-25 COPPERPLY® makes 1900 ft. span

Now you can span distances up to 1900 ft., depending on terrain, with special-strength National-Standard COPPERPLY wire (copper plated steel conductor). You eliminate as many as five poles per span with this new concept in long-span aerial insulated wire plant.

**MAINTENANCE SAGGING** and damage resulting from ice loading is virtually eliminated, since COPPERPLY does not exceed 55% of its breaking strength when loaded and resting on the ground. And COPPERPLY will meet NESC ground clearance requirements when unloaded.

**UNINTERRUPTED SERVICE**—under severe testing conditions, Special 080-25 COPPERPLY (25% conductivity, 4 mils of copper coating) was buried in three feet of snow for over three months without any interruption in line service. In addition, long-span installation with insulated COPPERPLY cuts installation costs, prevents the problem of mid-span hits, eliminates leaks to ground and reduces corrosion. Tree trimming and maintenance costs are appreciably reduced.

To get the complete story on Special 080-25 COPPERPLY and other standard sizes, contact National-Standard Company, Niles, Michigan. C-61-1




Special 080-25 COPPERPLY is designed to rest on the ground at 55% of breaking strength, allows great savings in pole installation.

NS NATIONAL-STANDARD COMPANY

**NATIONAL-STANDARD COMPANY**
*Niles, Michigan*

transfer rural subscribers from present exchanges to exchanges operated by other companies. In all cases, the transfers had the approval of both companies involved. Companies and exchanges listed in the orders were: The Lincoln Telephone & Telegraph Co. exchanges of Nemaha, Hastings, Nelson, Deweese and Guide Rock; The Shubert exchange of Southeast Nebraska Telephone Co., Falls City; Glenwood Telephone Membership Corp.'s Blue Hill and Lawrence exchanges; and the Red Cloud exchange of The American Communication Company, Belleville, Kan.

Also, the commission granted Northwestern Bell Telephone Co. permission to serve from its O'Neill exchange a rural applicant living in the vicinity of the Inman exchange of the Inman Telephone Co., but not in an area served by that company.

•

The Capital Telephone Co., Hickman, was authorized to establish these monthly rates for lightweight color telephones and for night lights:

| | |
|---|---|
| Color handsets, either standard or lightweight | $0.25 |
| Night lights on any type handset | 0.25 |

Regular installation charges will apply.

•

The Nebraska Commission also, on July 19 approved the sale of the Hoskins Telephone Co. to the Pierce Telephone Co., Inc. (TELEPHONY, July 22). The Hoskins company serves 85 town stations at Hoskins, and 172 switching stations in adjacent rural areas. The Pierce company proposes to secure an REA loan with which to rehabilitate the Hoskins exchange and convert it to dial operation.

Same rates will apply until after the conversion. Billing will be in advance, instead of in arrears, as was the practice of the Hoskins company. The commission issued a certificate of convenience and necessity authorizing the Pierce company to serve the territory of the Hoskins company.

•

The Northwestern Bell Telephone Co. received permission to offer Wide Area Telephone Service (WATS) for the state of Nebraska. The monthly charge for full-time service will be $550; and measured time will be offered on the basis of $245 for the first 15 hours, and $13.50 for each additional hour. The service is available from dial-operated telephones with a special access line which is included in these charges. A $10 installation charge applies, however. Additional appearances of this access line will be provided at a monthly charge of $5.00 and an installation charge of $10.

•

In other action, on June 20, the Nebraska Commission approved the sale of the Pleasanton Telephone Co. to the General Telephone Co., Columbus, and issued a certificate of convenience and necessity authorizing the General company to serve an area prescribed in a revised exchange map approved on May 29. The exchange will be converted to dial operation, and extended area service will be provided between Pleasanton and Kearney.

•

In a separate order of May 31, subscribers formerly shown to be in the Pleasanton exchange area were given permission to receive service from the Ravenna exchange of the Northwestern Bell Telephone Co. This change was also included in the revised exchange map of May 29 (TELEPHONY, April 15).

## Alter Rate Plea in Ohio

The Mansfield Telephone Co. and legal counsel for the city of Mansfield on July 11 submitted a recommendation and stipulation to the Ohio Public Utilities Commission for a gross rate increase for the company of $95,000. The Mansfield company previously had requested an increase of $463,000 (TELEPHONY, Jan. 30, 1960).

## Approve Sale of Kansas Company, Plan Conversion

The Northern Kansas Telephone Co., Ottawa, was authorized on July 12 by the Kansas Corporation Commission to purchase the Hoyt Telephone Co. (TELEPHONY, July 8).

Northern Kansas plans to convert the Hoyt exchange to dial service. The Hoyt Telephone Co. was authorized to cease business on completion of the cut-over project, which is expected to take about a year.

## Kan. Independent Requests General Rate Increase

The Sunflower Telephone Co., Dodge City, has asked the Kansas Corporation Commission for a rate increase at Marienthal, Tribune, Leoti, Weskan, Wallace, and Sharon Springs, it was reported on July 9. A hearing on the matter has been scheduled for Sept. 11.

Current and proposed rates are as follows:

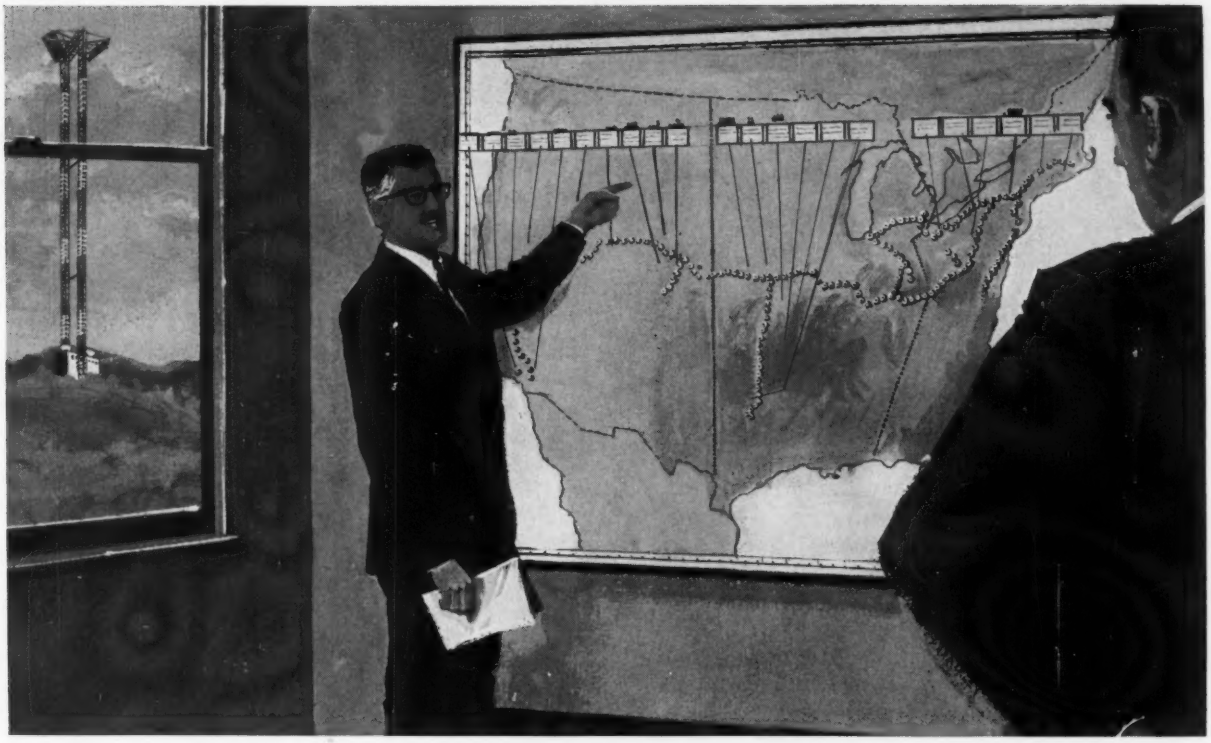
| | *Present* | *Proposed* |
|---|---|---|
| Business | $7.25 | $8.75 |
| Rural Business | 6.00 | 7.00 |
| Four-party residence | 3.75 | 4.75 |
| Rural residence | 4.00 | 5.00 |

## Authorize Merger of Two Northwest Ark. Companies

The Arkansas Public Service Commission on July 12, authorized the merger of the United Telephone Co., Alma, with Ozark United Telephone Co., a newly authorized company.

The Ozark company will exchange 15,000 shares of common capital stock

**Members and families of North Star Chapter, Independent Telephone Pioneers of America, from Minnesota and the Dakotas, posed for this picture on June 5, when they picnicked at Alexandria, Minn. Features of the get-together included the picnic, a tour of the Runestone Museum, and a coffee hour at Darling Ranch Resort. Tom Arvig of Melrose, Minn. was the photographer of this group. Arthur Krueger of Minneapolis is chapter president.**



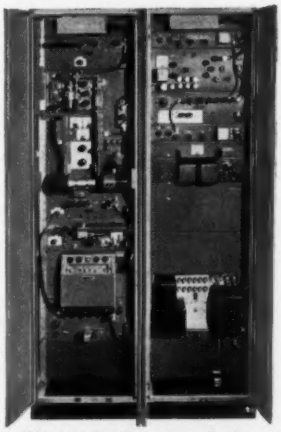
# Introducing the RCA MM-600 Microwave for high density, long-haul systems

New RCA MM-600 Microwave Equipment has been designed to meet the exacting transmission requirements of Common Carriers. Operating in the microwave band of 5925-6425 mc, it will carry 600 voice channels or an equivalent video signal for distances in excess of 3000 miles.

This new equipment will be used by Western Union Telegraph Company for their new Transcontinental Microwave System consisting of over 200 stations. This gigantic communications complex will provide facilities for data handling, facsimile, telegraph, television and other services.

The MM-600 meets or exceeds the CCIR/CCITT performance standards for International telephone and TV services. A controlled baseband spectrum up to 10 mc is available for other video applications. Standard r-f channel allocations fully coordinate with the Bell TH system and other allocations can be provided to meet individual requirements. Baseband combiners and switches are available to provide either diversity or fall-back circuit protection. Service Channel and Supervisory Equipment is engineered to meet individual system requirements. Continuous status reports from each station are transmitted to the control stations by a computer type code of high security.

The MM-600 uses a conservatively chosen combination of solid state and vacuum tube devices to insure top performance and long-term stability. A newly developed traveling wave tube using a replaceable glass envelope is used in the transmitters for long life and low replacement cost.



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at $10 per share for United Telephone's system at the Alma, Ozark, and Altus exchanges and adjacent rural areas.

## Iowa Mutual Increases Its Membership Rates

The Citizens Mutual Telephone Co., Bloomfield, Ia., has announced a general increase in monthly membership dues effective July 1.

Old and new rates are as follows:

| | *Old* | *New* |
|---|---|---|
| One-party business | $4.25 | $5.25 |
| Two-party business | 3.50 | 4.50 |
| One-party residence | 3.50 | 4.25 |
| Four-party residence | 2.50 | 3.25 |
| Rural | 2.50 | 3.00 |

Claude Bickel, manager of the Citizens company, said the increases were necessary because of increasing labor and material costs.

## SW Bell Gets Raise At Texas Exchange

The Waxahachie (Tex.) City Council has approved a rate increase for the Southwestern Bell Telephone Co.

One-party business rates will be raised from $10.50 to $11.25 and one-party residence rates will increase from $5.00 to $5.50.

## Karber Named Chairman Ill. Commerce Commission

Governor Otto Kerner has named James W. Karber of Ridgway, chairman of the Illinois Commerce Commission.

Commissioner Karber, whose appointment was effective July 20, succeeds George R. Perrine of Aurora who will continue to serve as a member of the commission.

An attorney, Karber served in the Illinois General Assembly from 1946 to 1950 and is a former state's attorney of Gallatin County.

He is a graduate of the University of Illinois.

Commissioner Karber is the former owner of the Abstract Co. of Gallatin County and is a former president of the Illinois Title Association. He was president of the Gallatin County Bank of Ridgway from 1943 to 1953.

The new chairman was appointed a member of the commission in February, 1961. His appointment was for a five-year term. He succeeded J. G. VanKeuren of DuQuoin, a Republican.

Commissioner Perrine, who was named a member of the commission and chairman by Governor William G. Stratton in 1953, has continued as chairman for six months under the administration of Governor Kerner. Perrine's term as commissioner expires in 1963.

## OK Ore. EAS Between Pacific Telephone-NW and West Coast

On his own motion, Oregon Public Utility Commissioner Jonel C. Hill on July 20 directed that Pacific Northwest Bell Telephone Co., Seattle, Wash., establish extended area service between its Carlton exchange and the McMinnville, Ore. exchange of West Coast Telephone Co., Everett, Wash.

Present and approved Carlton rates are:

| | *Present* | *Approved* |
|---|---|---|
| *Residence:* | | |
| One-party | $4.60 | $5.20 |
| Two-party | 3.70 | 4.00 |
| Four-party | 3.05 | 3.25 |
| Suburban | 3.30 | 3.50 |
| Farmer | 1.15 | 1.45 |
| *Business:* | | |
| One-party | $7.00 | $9.00 |
| Two-party | 5.75 | 7.00 |
| Suburban | 4.50 | 5.00 |
| Farmer | 1.70 | 2.10 |

## Neb. Sale, Finance Requests

The Nebraska Railway Commission held a hearing on July 18 on the application of the Hamilton County Telephone Co., Aurora, to sell to the Cuming


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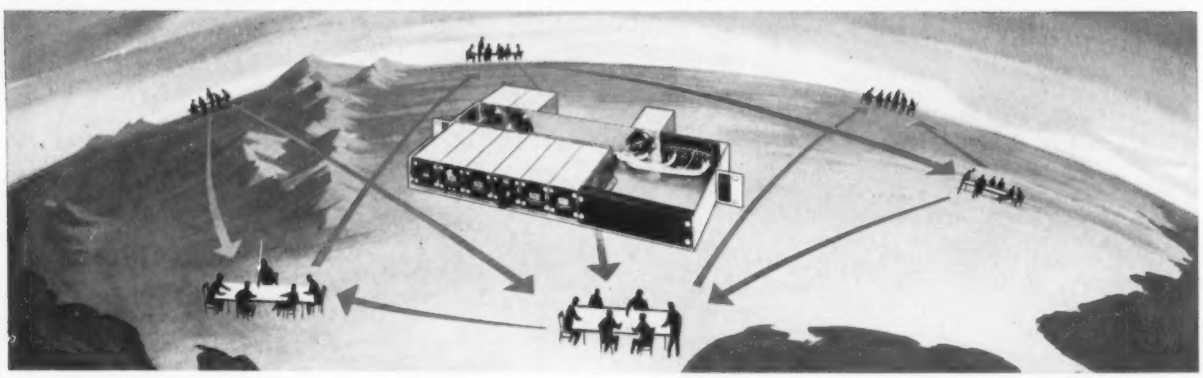

*Now, Derive Unlimited Extra Revenues from Existing Lines with This Important Advance in Telephone Service!*

Coast-to-Coast inter-office telephone conferences with many talkers at each location are now possible with the new ALTEC 7302 Loudspeaking Telephone System. The 7302 is a fully transistorized system that maintains uniform talking and listening levels regardless of distance with speech transmission of such great fidelity that familiar voices are recognizable instantly. With an effective audio coverage of a large size executive office, the system offers freedom of movement and comfortable hands-free operation to large groups of talkers.

The 7302 operates on *existing telephone lines* in conjunction with type 510 set or equivalent. Associated ALTEC equipment includes the 755C Loudspeaker and one of the following ALTEC Cardioid Microphones: Models M-30, 683A, or 685A. The 7302 mounts in standard 19″ relay rack and occupies only 1¾″ rack height. Power is supplied to the system from central office or PBX quiet battery supply of 24-26 v DC.

This system—now in use by a nation-wide retailer and a drug chain—provides the answer to their needs for instant consultation among their executives at branch offices throughout the country. With this system, you can now fill the many requests for this type of service from brokerage houses, military command facilities, and any organizations requiring group discussion of problems among specialists in separate locations. For complete information write Dept. T-B7.

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County Telephone Co., Wisner, its properties. The Cuming County company asked to issue notes and a mortgage in the principal amount of $1,360,000.

### Sapphires to Be Space Guard For Telephone Satellites

Thousands of pieces of man-made sapphire will cover the surface of the communications satellites now being developed by Bell Telephone Laboratories, according to announcement by the company's president, Dr. James D. Fisk, who explained that the sapphires are expected to protect solar cells from space radiation, enabling "working" telephone satellites to endure the rigors of space for 10 years or more.

Doctor Fisk made his comments on satellite communication as he delivered the 15th annual Charles M. Schwab Memorial Lecture at the general meeting of the American Iron & Steel Institute, held recently.

Doctor Fisk emphasized the sapphire protection as an example of thoroughgoing measures that are being taken to achieve long-life satellite reliability. Bell Laboratories is using an approach it evolved in developing submarine cable systems, by means of which some 1,500 electron tubes have functioned under the oceans for the past two to six years without a failure.

He said, "Now the exacting methods that produced extremely reliable submarine cable systems are being applied to satellites. The result should be a shipshape, spaceworthy communications relay station."

He pointed out, however, the pressing need for a "real-life test" in space.

Until now, most satellites have been designed for short-term experiments in space. Bell engineers have set as their goal the production of satellites that will work dependably for many years, serving as radio relay stations for such communications overseas as telephone calls, data and other forms of communication.

The Bell System previously announced plans to develop a satellite communication system and put it into operation as soon as possible. A ground station in Maine will be ready early next year. The first test satellite will be ready at the same time, if the government designates a launching vehicle soon. The Bell System has offered to pay costs of the rocket and launching.

Doctor Fisk said that the first experimental telephone satellite will be roughly spherical, but may have as many as 60 flat surfaces or gem-like facets.

The solar cells on each facet would receive an equal amount of light. The solar cells — invented at Bell Labora-


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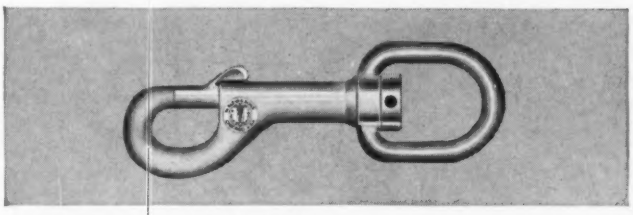

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tories — are small silicon wafers mounted on the outside surface to convert sunlight to electricity. The sapphire sheathing will protect the solar cells from the deteriorating effects of electron bombardment in space. It will also reduce the effects of proton bombardment.

Two different sizes of test satellites—with diameters of 27 inches and four feet—are being considered for experiments. More than half the surface of the smaller one would be covered by over 4,000 Bell solar cells; the larger satellite, by 12,000 cells.

Covering the cells will be an equal number of slices of man-made, crystal-clear sapphire. Other protective materials are not being ignored, although sapphire appears most promising.

The sapphire, Bell says, does not cost significantly more than other high-quality materials that might be used, and only about one-third of the cost of the solar cells themselves. Sapphire has other advantages. For one, it will convey heat away, preventing the solar cells from being overheated in long periods of continuous sunlight.

Another advantage is that the use of sapphire overcomes the effects of very rapid and extreme changes of temperature in space. Most materials expand when heated, but by different amounts. If the rate of expansion differs too much, the materials will not stay fastened together.

The sapphire slices will be brazed to platinum sidebars which will be soldered to a ceramic base. These materials were selected because they all expand at very nearly the same rate.

In addition, sapphire, being hard, will resist erosion by micrometeorites.

Under the reliability approach evolved in the development of submarine cable and other systems, the goal is to assure a predictable long life for the entire system. To do this, engineers must develop each individual component to such a reliability that its individual predicted life-length is far greater than the goal for the over-all system.

"First they must study the environment—whether it is two miles beneath the sea or 4,000 miles above it—and define all the conditions and hazards," Doctor Fisk said.

Then, in an artificially simulated environment, they intensify the effects of the hazards to make the components fail. The engineers then redesign until they can predict accurately the reliability of a required component. Finally, they conduct a real-life test program to confirm that the system performs as predicted.

Unfortunately, the space environment is not yet known precisely. The exact amounts of radiation in space at various altitudes and under varying circumstances have not been measured. Therefore, Bell Laboratories engineers plan to use their first experimental satellite, both to take additional measurements of space radiation, and to serve as a first "real-life test" of components planned for a working satellite system.

## Wire Tapping Inadmissible In Wis. Under New Law

A bill making evidence obtained by wire tapping inadmissible in Wisconsin courts was signed into law on July 12 by Governor Nelson.

The governor commented, "This is a good bill that, unfortunately, still does not go far enough in controlling the practices of wire tapping." He pointed out that wire tapping still would not be illegal.

Governor Nelson added, "I hope that the legislature will act soon on legislation to bar all private wire tapping and clearly define proper authorities that can use wire tapping."

Wisconsin's senate has killed one bill that would have outlawed wire tapping and most other forms of such eavesdropping, except in "certain circum-


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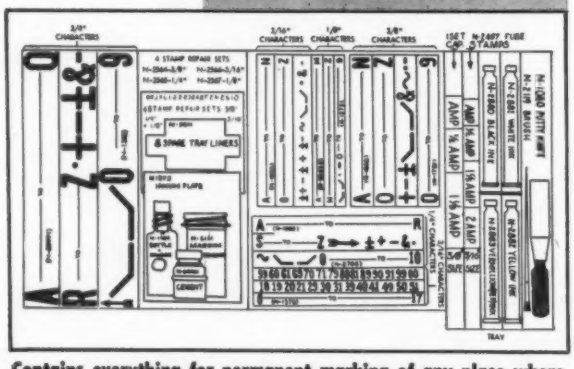

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stances," it was reported by Milwaukee *Journal*.

## IN THE NATION'S CAPITAL

*Continued from page 19*

able because they have no market value.

President Kennedy also asked Congress for a withholding tax of 20 per cent, to be collected at the source, on dividends and interest paid on taxable bonds, savings accounts, and similar income. Business interests were particularly critical of this proposal during public hearings, but the House committee approved a compromise version which would withhold 16⅔ per cent of interest and dividends. The committee estimated this would pick up 537 million of an estimated 834 million dollars in annual tax revenue which is lost through failure of taxpayers to report income from interest and dividends.

### *How Much Long-distance Reduction?*

Another frequent source of rumor around Washington these days is whether the FCC will cut interstate long-distance telephone rates and, if so, how much. As previously noted in this department, FCC Chairman Minow has announced that the commission is undertaking a study for reduction of long-distance telephone rates. Minow said that the profit margin on AT&T's long-distance business is now approximately 8 billion dollars a year. In 1959, the FCC and AT&T negotiated a 50-million-dollar yearly reduction in these rates. Minow said the matter is "under study."

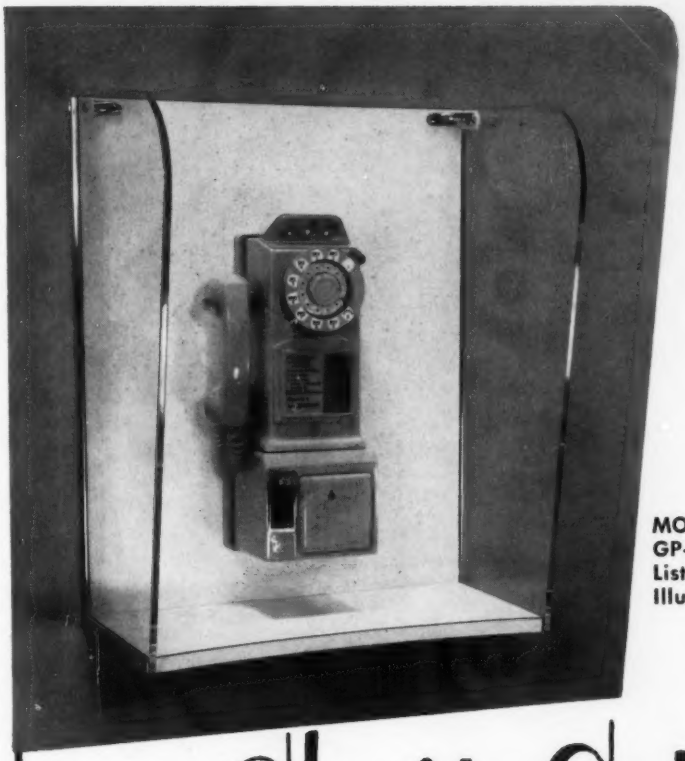
Since July 10, top officials of AT&T and the FCC have been negotiating with the view of finding a satisfactory adjustment of alleged excess in the return on long-distance interstate business. One source has suggested that a cut, soon to be announced, will be in the area of 100 million dollars a year on interstate long-distance rates, to become effective about Oct. 1.

### *More on AT&T Overseas Cost Study*

The FCC made public the text of the following letter which it has sent to the American Telephone & Telegraph Co.:

"The commission by letter dated July 26, 1960, requested that you undertake a cost study of your overseas communication services to develop for these services the investment, expenses and revenues associated therewith.

"In your reply of Aug. 8, 1960, you recalled previous discussions with the commission relative to your views of a worldwide cable system and stated that since there had been a number of developments in that field you would like to present to the commission the cur-

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rent status of your cable plans before undertaking the requested cost study.

"Shortly thereafter you did make such a presentation to the commission. You further stated in your reply that meanwhile you proposed to consider methods and procedures which might be appropriate for a study of your overseas operations.

"The commission has further considered this matter in the light of current developments and desires that you proceed at once to make a cost study that will reflect the current level of earnings on your overseas communication services.

"In this connection, arrangements should be made with our staff immediately for the purpose of working out some of the details of the cost study. As indicated in your letter of Aug. 8, it is presumed that you have done considerable preliminary work in this connection since that time.

"Without in any way delaying the completion of this study, the commission requests that, during the course of the study, the company give attention to the matter of formulating procedures that will readily provide this type of information whenever required.

"In previous discussions of proposed cost studies your position, as we understood it, was that such studies would be of little value because of the rapidly changing complexion of overseas business occasioned by new cable projects and the advent of satellite communications.

"As you are aware, the commission has never had before it data on which to properly evaluate the level of earnings on your overseas communication services. Such an evaluation can no longer be delayed.

"As we are sure you appreciate, postponement of further commission consideration of this matter until the character of your business stabilizes is out of the question since the point of time at which this is likely to occur cannot possibly be foreseen at this time. We have noted, for instance, the substantial amounts that Bell Laboratories is billing your company for satellite research and development and your applications for construction of new cable in the Pacific area.

"We will appreciate your cooperation in promptly complying with this request."

### *New Model Ford*

A race between a Ford and a stork resulted in the absence of one Commissioner from FCC's July 12 meeting.

Mrs. Frederick W. Ford, wife of the commissioner, gave birth to Frederick W. Ford Jr. at 8:45 a.m. in George Washington University Hospital. The new model Ford weighed eight pounds, two ounces.

Later the same day, FCC Commissioner John S. Cross became a grandfather for the fifth time. Mrs. Charles C. Cross had a baby boy in Charleston, S. C.

## TOO MANY COOKS

*Concluded from page 17*

task of making available the necessary rocketry, will now get on with the job. In short, we hope the President will stand firmly behind Johnson on this decision and make it stick.

But we also know that there are still plenty of places for stumbling. The Justice Department, in its zeal to see that no taint of antitrust should blemish, and the State Department, in its worry over foreign relations, are still prone to monkeying with the red light buttons even up to the last number in the count-down. And there are those perennial agitators in Congress ever ready to jump up and holler "monopoly" and talk darkly about the need for "investigation" and for holding up everything until further "studies" can be made. That is the sure way to give Khrushchev and company a fine opening for another Soviet "first." Well we don't want *that* to happen!

And we don't want Uncle Sam in the telephone business or any other communication business. We don't ever want his foot in the door. Uncle Sam has plenty of other things to do where he is really needed. The United States today has the best and most telephone service in the world because it was developed first and last as a private enterprise system. We could change all that before we know it, if we allow too many cooks to mess or meddle in the stew in Washington.

## Obituaries

Leon L. Roome, owner of the Halsey (Ore.) Telephone Co. died on June 22 following a heart attack.

A native of Waynoka, Okla., Mr. Roome went to California at an early age. He had moved to Halsey about eight years ago.

A director of the Oregon Independent Telephone Association, Mr. Roome had also served his community as a city councilman.

Survivors include his widow, Vivian Hubbard Roome, and three children, Ronald, Rhonda and Randal.

•

LOUIS KLINGEL, 77, St. Paul, Minn. telephone engineer, died on July 14 following hospitalization for a heart ailment.

Mr. Klingel headed the E. L. Klingel Co. of St. Paul, which was founded in 1919. He was active in telephone research and the equipment field for 61 years, and also held several patents relating to the industry.

He was a life member of the In-


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dependent Telephone Pioneer Association.

Survivors are a daughter, Mrs. R. I. Edenbaum of Berkeley, Cal.; three sons, James E. of St. Paul; Thomas R. of Minneapolis; and Robert L. of Mendota Heights, Minn.; a sister, Miss Helen Klingel of Edwardsville, Ill.; a brother, S. J. Klingel of Hamel, Ill.; and 10 grandchildren.

## NEW YORK CONVENTION

*Continued from page 26*

Turning to work which he feels will ameliorate conditions in the industry, he said: "I refer to the matter of continuing property records . . . Those who fail to establish accurate records may find themselves stymied when they seek rate changes or security authorizations. . . . When a company, whose records are in good shape, petitions the commission for a general rate increase, or for financing, its chances are far better for expeditious processing of these matters than is the company which has either an incomplete continuing property record or no such record at all."

He commented also upon the value of intercompany foreign exchange service, which he feels should be offered by all telephone companies.

Commissioner Lehr said he understood that in New York each of the Independent companies is being invited to make such services as WATS, initiated by AT&T, available to their subscribers, and he expressed the hope that each telephone company will direct its efforts here toward "what appears to be the best interests" of the company and its subscribers.

On the closing day of the meeting, a talk on "Digital Communications" was

**Ronald S. Dodgson, of Chicago, Ill., principal engineer-systems analysis, research and development department, of ITT-Kellogg, delivering his paper on "Digital Communications" before New York association convention.**


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- Measuring Range: +18 dbm to −50 dbm
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- Impedances: 600 and 900 ohms
- Self Calibrating
- Talk and Hold Circuits

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- Measuring Range: +8 dbm to −30 dbm
- Send Levels: 0 dbm to −30 dbm
- Send Frequencies: 8 fixed frequencies including 1300 and 2300 cps
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- Switchable Hold Coil
- Switchable Termination: 900 ohms +2 mf
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**MODEL TTS 18A LEVEL and DC CURRENT METER**

- Level Ranges: 0 dbm to −20 dbm and −10 dbm to −30 dbm
- DC Current Range: 0 to 100 ma
- Dial Through Provisions
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- Wide Frequency Response

Other instruments available from Northeast Electronics Corporation include Single Frequency and Multi-Frequency Reference Tone Generators, Loop Around Transmission Test Systems, Fault Locator, Singing Point Test Set, Program Amplifiers, and RF Power Monitors.

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presented by Ronald S. Dodgson, supervisor of systems analysis for ITT-Kellogg, Chicago, Ill. Mr. Dodgson devoted his time to a discussion of the fundamental methods of transferring information via communications media: the analogue, and digital methods.

Because of these techniques, he told his audience, errors can be sensed, should they occur, even with more refined equipment to correct them. He also reported that it has now become practical to convert analogue voice sounds into digital form for electrical transmission over great distances, and reconvert the received digits into the voice sounds at the distant end. Mr. Dodgson feels that there is a good future for the use of digital techniques in communications transmission.

A representative of the aviation industry, Nelson Lee Smith of New York City, vice president of American Airlines, brought an out-of-the-industry, but related message, as he presented "Some Current Economic Problems of Regulated Business."

Mr. Smith said, "I have long been convinced that all the regulated businesses have much in common. . . . These common features include a wide range of economic, social and governmental characteristics and problems. . . .

"I wish to emphasize, however," said the speaker, "my recognition of the extremely important role of communications in present-day social and business affairs. Can anyone suppose that business could be conducted as expeditiously and efficiently, or that our personal lives could be as well ordered as they are, without the vast and growing telephone network which now covers our country?"

He believes the health of the telephone industry, like that of other regulated businesses, is both directly and indirectly an important ingredient in the welfare of the economy as a whole. He said:

"Furthermore, . . . Ours is the only major nation in the world today where all the transportation and utiiity services, with perhaps the exception of water-supply systems, are owned and operated by regulated, but privately-owned, companies. In most countries, even in the so-called Free World, some, or all of them, are government-supported (or government-owned) monopolies. . . . I share what I am sure is your fervent hope: that we can retain the advantages of private enterprise in all of our regulated businesses. And it is my conviction that we shall do so, provided only that we display the ingenuity needed to properly meet the challenges which lie ahead.

"These challenges involve, primarily: First, our ability to grow at least in accordance with the expanding requirements of the economy as a whole; secondly, to continue the advance of technological progress which has been so noteworthy in the past, and last, but by no means least, to preserve the incentives which are necessary to stimulate, not only the enlargement and improvements of our service, but also the encouragement of efficiency which will keep our costs at a minimum consistent with these objectives. These are the economic problems with which we—and no less those who are charged with responsibility for our regulation — are currently confronted."

Mr. Smith concluded his remarks by quoting Frederick R. Kappel, president of American Telephone & Telegraph Co., from his address before AT&T shareholders in April:

"Today as always, we depend on both federal and state regulatory bodies seeing the wisdom of earnings that will keep our businesses in good financial health and assure first-rate service at reasonable cost. In recent years we have been able to improve both service and earnings by introducing better equipment, widening our service offerings, and increasing efficiency. When these efforts are effective, as they have been, we do not believe that regulators should penalize progress and destroy incentive by putting a low ceiling on profits. As long as profits are within a reasonable range—and there is no part of the regulated businesses today where they are above that—we need the leeway that spurs effort and brings about real progress."

Directors elected by the New York State Telephone Association for 1961-62 are: J. Benedict Ackley of Copake; George S. Beckwith of Au Sable; S. Fenton Busfield of Deposit; Donald F. Davison of Ogden; Fred S. Florance of Highland; and C. Ray Lloyd of Manlius.

Other directors are: William A. Kern of Rochester; William S. Kingman of Norwich; Roderick A. Nixon of Westfield; Lewis F. Shepherd of Jamestown; and Marshall K. Taylor of Johnstown.

The directors re-elected these officers: President, Mr. Beckwith; vice president, Mr. Lloyd; W. Malcolm Griswold of Phelps, treasurer; Mr. Davison, secretary and assistant treasurer; and Mr. Cunningham, executive secretary.

## Pass Fraud Bill in Wis.

Wisconsin's Governor Nelson has signed a bill providing penalties for defrauding telephone companies by using another person's credit card number without his permission, or by charging a call to a non-existent telephone number (TELEPHONY, May 6).

## The Free Honor Duty

"Men must be either the slaves of duty, or the slaves of force."—JOSEPH JOUBERT.


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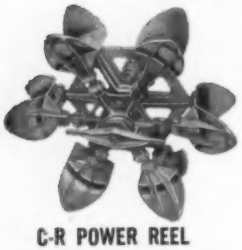

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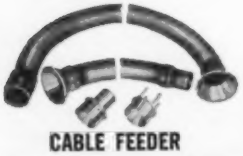

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# NEW DEVELOPMENTS

*Continued from page 24*

can accurately locate a fault. The fault may be displayed on an oscilloscope which is an integral part of the instrument.

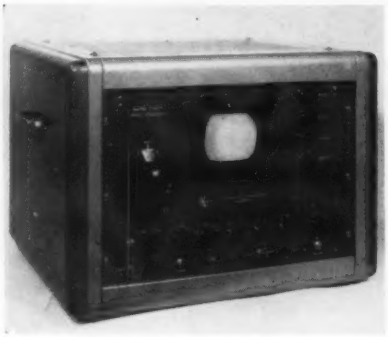

**Fig. 28. Fault locater.**

Recent tests on cable indicate that this instrument can also be used to advantage in locating such faults as opens, shorts, grounds, loading irregularities, and bridged taps.

•

**Level and DC Current Meter. (Fig. 29).** Northeast Electronics' Model TTS 18A is a small, compact level meter with dial through provisions, designed to measure levels from 0 dbm to —30 dbm in two ranges, and dc current from 0 to 100 ma. It is normally supplied to make level measurements on 900-ohm circuits, but other impedances can be supplied on request. A transistor amplifier provides the required gain for the instrument; it operates at low current levels and requires a single standard 9-volt transistor battery. Battery life is over 200 hours when the instrument is operated intermittently, i.e., four hours on and several hours off. In continuous operation, battery life is approximately 140 hours.

Two metal binding posts marked LINE and two marked TEL SET are

**Fig. 29. Level and dc current meter.**

Get either—fast—from Commercial Cord! ■ There's a full stock of top quality cords coast to coast, in ours and our distributor's warehouses. There's every kind of phone, patch and test cord—including the exclusive Spiraflex® retractile. You get what you want—right away. ■ Get catalog, samples, prices from Commercial Cord Co., Clifton Springs, N.Y. Distributed by: Leich Sales Corp., 427 W. Randolph St., Chicago 6, Illinois; Automatic Electric Sales Corp., Northlake, Illinois.

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Here is the perfect way to do your emergency touch-up painting on passenger cars, commercial vehicles and other equipment where the "Telephone Green" color is used. Dries within 5 minutes to a hard, glossy finish. Easy to use —always ready. Saves man hours and eliminates waste and mess of brushes and spray equipment. Durable on metal, wood or plastic surfaces. For interior or exterior use.

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provided on the panel of the instrument. They accept banana plugs, spade lugs, wire, and clip leads. Only two switches are supplied for making measurements: (1) Push to measure switch, and (2) function switch.

In the normal position of the PUSH TO MEASURE switch the LINE terminals are connected to the TEL SET terminals. By connecting a subscriber instrument or "lineman's talk set" to the TEL SET terminals it is possible to dial through to a test position or a number assigned to a milliwatt reference generator, such as the Model TTS 9S Multi Frequency Reference Tone Generator. When the PUSH TO MEASURE switch is depressed, measurements are made at the various positions of the FUNCTION switch.

The five positions of the FUNCTION switch permit the following measurements:

(1) DC current of line plus instrument.
(2) DC current of line only.
(3) Line loss from 0 to —20 dbm.
(4) Line loss from —10 to —30 dbm.
(5) Battery test.

•

**Transmission Test Set. (Fig. 30).** Northeast Electronics' Model TTS 1 FA transmission test set is designed to measure levels from +8 dbm to —30 dbm, and to supply output levels up to 0 dbm at eight frequencies. Signals can be supplied and measurements made on either 600 or 900-ohm circuits.

A function switch provides means for selecting the desired mode of operation. It is possible to send and receive simultaneously, send only, receive only, connect the LINE terminals directly to the EXT terminals, and calibrate the oscillator, by selecting the desired position on the FUNCTION switch.

When the set is used to Send and Receive simultaneously, the RECEIVE, or level measuring section of the set, is connected to the LINE terminals and the SEND section is connected to the EXT terminals. A switchable hold coil is connected to the LINE terminal. A resistive hold circuit is provided while sending on the EXT terminals. Separate switches are used for selecting either 600 or 900 ohms impedance for the send and receive functions.

When the FUNCTION switch is on the EXT position, it connects the LINE terminals directly to the EXT terminals. It is, therefore, possible to connect a subscriber's instrument or a "lineman's talk set" to the EXT terminals, connect it to the line through the FUNCTION switch and call a test position or a number assigned to a milliwatt reference generator. When the signal is on the line, the FUNCTION switch is turned to the desired position and the measurement is made.

**Fig. 30. Transmission test set.**

A calibrated control for the RECEIVE section and a SEND level control for the SEND section are available on the front panel. The REC Cal control is adjusted with an external 0 dbm signal on the line terminals and the FUNCTION switch in the REC position; 0 dbm can thus be set precisely. After adjustment, a locknut is tightened to lock this control. The SEND ADJ control permits setting the oscillator at any desired level between 0 dbm and —30 dbm, as read on the meter.

The frequency response of the receive portion of the test set is within 0.1 db from 300 cps to 3,000 cps. At 5,000 cps, the response is down 0.25 db and at 10,000 cps, 1.0 db. An external adapter can be supplied that provides a trap filter having approximately 30 db attenuation at 60 cps.

*(To Be Continued)*

## MARKETING MAKES MONEY

*Continued from page 34*

portance of customer satisfaction in marketing our securities in the highly competitive financial market. And to understand the importance of customer satisfaction in the markets where we sell our products and services, we have only to open any magazine that is handy, or review the newspaper, to find numerous instances of competing communication products that are designed to capture a portion of what traditionally has been the telephone communication customer market.

### *Consistent With Definitions*

An analysis of this broad meaning of marketing is consistent with any of the acceptable definitions that are applied to marketing. As an illustration, one of the most widely accepted definitions is that we have the right product, at the right time, in the right place, and at the right price. If we provide our customer with complete satisfac-

tion, or at least as complete as is corporately possible, we will be providing him with the product that he wants, we will be furnishing it to him at the time that he wants it, at a price that is consistent with the value he places on it, and it will be promoted in a manner that is acceptable to him.

Acceptance of this meaning of marketing is recognition that every job that is performed by every employe has a direct bearing on the company's profit potential. The realization that this marketing attitude must permeate all areas of the total company operations to be most effective, makes it mandatory that we set as a basic objective for our marketing program the development of a complete understanding on the part of every employe, not only of the meaning of marketing, but an interpretation of how he can use it every day to benefit himself, the customer and the company.

### *Determine Customers' Needs*

While there is nothing earth-shaking about stating our desire to create good customer relations or customer satisfaction, the approach to achieving customer satisfaction under the marketing concept is considerably different than the approach that some of us have experienced in the past. Under the marketing concept, we first determine the customers' needs and desires, and then apply all of our corporate capabilities to provide the products or services desired. We promote the products and services under favorable terms, and as a result of doing these things well we increase our revenue and profit while attaining a high degree of customer satisfaction.

The marketing approach to increasing profits begins with the customer and is followed by a dedication of the total corporate effort to fulfilling his needs and desires in a manner that will assure the maximum of the market potential and profit.

Customer relations takes on an even greater significance when we establish the direct relationship between our profit potential and our ability to create customer satisfaction. In this frame of reference each and every employe makes a direct contribution to, or detracts from, our profit potential depending upon the manner in which he performs his regularly assigned duties.

### *Everything Influences Climate*

When, for example, we provide a product or service that our customer wants and it is installed in a manner that gives him complete satisfaction, we have developed a favorable atmosphere toward realizing future communication sales. When, through our equipment and our traffic people, we provide


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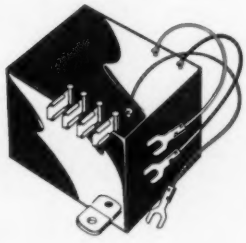

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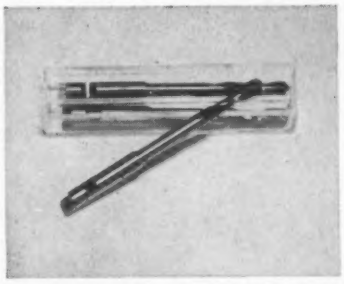

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fast, accurate, dependable service in a manner that cultivates the customer's satisfaction, we have established a relationship that will enhance our future sale of service. The regular customer bill, if it is submitted on time, is accurate, neat and understandable, creates customer confidence that aids directly toward the development of future sales. Everything we do has some influence on the climate in which we will be selling in the future.

Sales or selling as used here is not confined to just our products and services, but it includes gaining acceptance of our need for adequate rates, promoting the dependability and reliability of our company, the marketing of our securities, and the enhancement of our corporate image. To realize the many benefits of effective marketing, all employes must participate; hence marketing is not a job for a single individual or a department, but rather it is an attitude; and when it is understood and accepted by our entire organization it will result in each individual employe being better equipped to do his particular job in a way that will gain the best possible customer reaction, thus contributing to our profit potential.

### *Change in Past Procedures*

While many of our companies differ in their characteristics and the territories they serve, each and every one of us can benefit substantially from an understanding and acceptance of good, sound marketing principles. An acceptance of the marketing attitude entails the acceptance of the need for substantial change in our traditional way of carrying on our business functions. It means realignment of our emphasis as well as changes in certain long-established practices and procedures.

All of us have a certain resistance toward change. This means that in order for us to attain the multitude of benefits that can come from a total operation that is guided by a marketing approach, we will have to take some specific action.

I can assure you that an understanding, acceptance and application of the "marketing attitude" will not just happen. Someone in the company will have to work to bring it about. To realize its benefits we will have to invest time, money and effort; an objective must be established; a plan must be developed; responsibilities must be assigned and, most essential, the plan must enjoy understanding, direction, support and participation from the top executive officer of the company. In this atmosphere, a carefully developed plan can be successful in introducing the marketing philosophy to our operation.

*(To Be Continued Next Week)*

## Renshaw Named to Direct REA Telephone Program

Edgar F. Renshaw, a career employe of REA, has been appointed assistant administrator for the REA telephone program. Appointment of Mr. Renshaw to this position was announced by REA Administrator Norman M. Clapp on July 17.

E. F. RENSHAW

In his new capacity, Mr. Renshaw will be responsible for directing and coordinating the rural telephone program. Prior to this appointment, he was assistant to the deputy administrator.

Mr. Renshaw joined REA in June 1939 as an engineer trainee. From 1950 to 1951, he served as a regional head in the old Applications and Loans Division. In 1951 he was made assistant chief of the Applications and Loans Division in the telephone program. From 1952 until 1959 he served as assistant chief of the Telephone Operations and Loans Division.

When the telephone staff of REA was reorganized in August 1959, Renshaw was named director of the north central area and was responsible for the REA telephone activities in Illinois, Iowa, Minnesota, North Dakota, South Dakota and Wisconsin. He was promoted to assist the deputy administrator in April 1961.

Mr. Renshaw is a native of Nettleton, Miss. and received his B.S. degree in electrical engineering from Mississippi State College. He was on active duty with the Navy for three years during World War II.

## Triumph Over Self

"Do you want to know the man against whom you have most reason to guard yourself? Your looking-glass will give you a very fair likeness of his face."—WHATELY.

# Helpful Literature

BACKHOES—A new bulletin released by the Parsons Co., features four Parsons-Shawnee backhoes: the model 1,000, with a 10-ft. deep digging capacity; the 12-ft. 1,200; the 13-ft. 1,300; and the 15-ft. 1,500.

The company has described the advantages of these backhoes and provided illustrations, including what it terms "Hydaway" hydraulics, with cylinders, pistons, and hoses enclosed and protected; a 3-position dig-all bucket; non-skid stabilizers; safety locks on both boom and swing; multiple series control; rubber stops on frame to cushion against swing mechanism; and full 180-degree swing.

Complete specifications on all models are included in the bulletin also, plus picture-stories of other Parsons-Shawnee equipment: the Hydroclam, rear blades, and front end loaders. Request HL685.

•

80A PABX—Two new catalogs, a 4-page sales aid, and an 8-pager, which furnishes more detailed information, are now being offered on the Leich Sales Corp.'s 80A PABX.

Leich states that the 4-page sales aid is designed to help the telephone company sell its business customers the 80-line stock PABX. It also emphasizes the time and money-saving features.

With the 80A PABX, Leich states that subscribers can dial inside, outgoing, city trunk transfer, consultation, and conference calls — without help from the attendant. Regular dial telephones without special buttons or equipment are used.

The operation of Leich's compact keyset attendant's turret is also explained. Incoming city trunk calls are extended by simply pressing three buttons. Other services are also listed.

Leich's 8-page catalog includes details of all standard and optional services.

Such information as capacity, ex-

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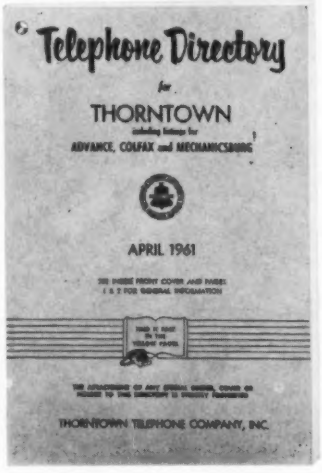


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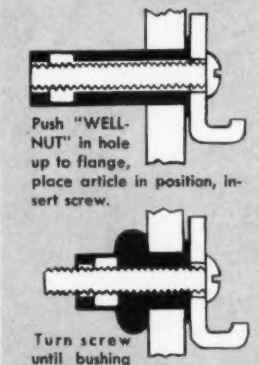
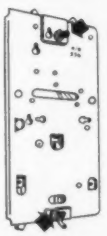
"WELL-NUT"




the ideal blind fastener for many uses in telephony

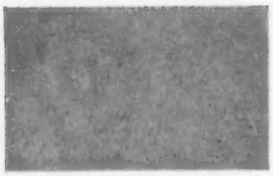
The "WELL-NUT" dampens vibration . . . muffles noises . . . provides an air-tight, water-tight seal . . . has excellent insulating properties. It is a flanged neoprene bushing with a brass nut bonded inside the narrow end. In making an assembly, the narrow end is inserted into a hole in the inner panel until the flange rests against the outer surface. The outer part of the assembly is placed against the flange with the holes concentric. A conventional screw is then thrust into the bushing and turned into the nut, drawing the latter against the inner surface. The tension on the nut causes the bushing to bulge laterally, tightly sealing the hole and the threads of the screw. Access to the inner surface of the assembly is not necessary. The "WELL-NUT" works equally well in hole or cavity. 13 standard sizes; special sizes available in quantity.



In securing this wall telephone base plate to dry wall, Telephone Companies currently using C-632 Well-Nuts use one or two in the upper slot and one in the bottom slot.

*Write For Bulletin and Samples*

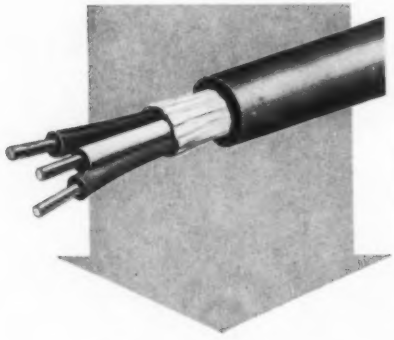
**ROCKWELL PRODUCTS CORPORATION**
Dept. H 146 Central Ave., Newark 3, N. J. • MArket 3-7650



SUPERIOR

INSIDE-OUTSIDE

STATION WIRE



Superior IO wire was designed to lead a triple life. Use it in exposed outside locations; use it for inside positions; use it as a combined inside-outside wire.

Conductor insulation and outer jacket are of rugged, all-weather polyvinyl chloride, which provides excellent resistance to abrasion, oil, alkalies, and most solvents.

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5580


amples of equipment arrangements, and type of power supply are furnished.

The all-relay switchboard unit and auxiliary trunk bay are also described. Request HL686.

•

**ELECTROWRITER CASE HISTORY** —A new brochure presenting case history studies of Electrowriter service is available from the Comptometer Corp.

Many present installations of Electrowriter Communication Systems, as well as the instant transmission of handwritten information which, the company states, can be accomplished to any number of points, in any location, and for any distance, are included in this "Modern Graphic Communications Study." Request HL687.

•

**RESISTOR CAPACITOR UNIT** — A new catalog, detailing the contact protection afforded by the Rifa resistor capacitor unit, has been issued by the Presin Co.

Diagrams of applications of the type PMR 300 thermosetting cased unit, and of the 500 metal-cased tubular RC unit are included.

Also incorporated in the 8-page catalog is a reprint of the Bell Telephone Laboratories article, issued in Sept., 1956, entitled, "Relay Contact Protection," by R. H. Gumley, which, the company states, has proved "extremely useful" to engineers. Request HL688.

# PLANT MAN'S NOTEBOOK

*Continued from page 39*

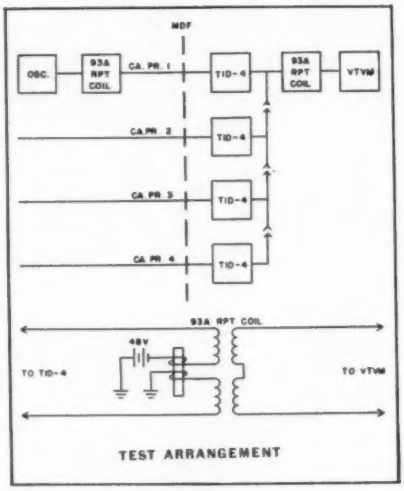
Cable Pair No. 4, 2 KF No. 24 ga. and 6 KF No. 22 ga.

Prior to the installation of the isolation units, the attenuation of the test Cable Pair No. 1 was measured at three test frequencies with the following results:

| | *Loss DB* | | |
|---|---|---|---|
| | *1000 CPS* | *2000 CPS* | *3000 CPS* |
| Cable Pair No. 1 (Test Pair) ..... | 7.5 | 11.2 | 13.7 |

After the installation of the bridged tap isolator device, transmission tests were again made over each pair connected at the central office terminals. Transmission losses due to the isolation units were not measurable and were assumed to be approximately 0.1 db.

The four cable pairs were now bridged together as tabulated below. The transmission measured over Pair No. 1, test pair, as follows:




TEST ARRANGEMENT

**Fig. 2**

| *Bridged* | *Treatment* | *Loss DB 1,000 CPS* | *2,000 CPS* | *3,000 CPS* |
|---|---|---|---|---|
| Pairs No. 1 and No. 2 | None | 9.6 | 14.5 | 17.6 |
| Pairs No. 1 and No. 2 | Isolator | 7.7 | 11.4 | 13.8 |
| *Improvement effected on Pair No. 1 by isolator: | | 1.9 | 3.1 | 3.8 |
| Pairs No. 1, No. 2 and No. 3 | None | 13.3 | 18.2 | 20.9 |
| Pairs No. 1, No. 2 and No. 3 | Isolator | 7.8 | 11.8 | 13.9 |
| *Improvement effected on Pair No. 1 by isolator: | | 5.5 | 6.8 | 7.0 |
| Pairs No. 1, No. 2, No. 3 and No. 4 | None | 14.5 | 19.7 | 22.9 |
| Pairs No. 1, No. 2, No. 3 and No. 4 | Isolator | 7.8 | 11.4 | 13.9 |
| *Improvement effected on Pair No. 1 by isolator: | | 6.7 | 8.3 | 9.0 |

*Neglects 0.1 to 0.4 db loss of 1 to 4 isolators.

Similar improvement could be effected on Pairs No. 2, No. 3 and No. 4.

A comparison of the foregoing loss is graphically indicated in *Fig. 1.*

The test procedure used in this field trial is graphically indicated in *Fig. 2.*

## ITT to Acquire American Cable & Radio Stock

A plan for the acquisition by International Telephone & Telegraph Corp. of the remainder of the outstanding stock of its 56.55 per cent-owned subsidiary, American Cable & Radio Corp., was announced on July 18 by both companies.

Under the plan, a new subsidiary of ITT will acquire all of the assets of

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International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

American Cable & Radio and the stockholders of American Cable & Radio will receive $4.00 of ITT convertible preferred stock and 1/7 of a share of ITT capital stock for each share of American Cable & Radio stock.

Harold S. Geneen, president of ITT, said: "The proposal to make American Cable & Radio wholly-owned is due to our realization for some time that we could not effectively achieve the overlapping objectives of American Cable & Radio and ITT's communication operations without complete management integration. In addition, American Cable & Radio alone will be unable to provide the substantial financial and technical resources necessary for the rapid growth of international communication, including the probable advent of satellite communications within the next decade."

The plan will be acted upon by American Cable & Radio stockholders at a date to be announced.

## Sins of Fathers

"'One soweth and another reapeth' is a verity that applies to evil as well as good."—GEORGE ELIOT.

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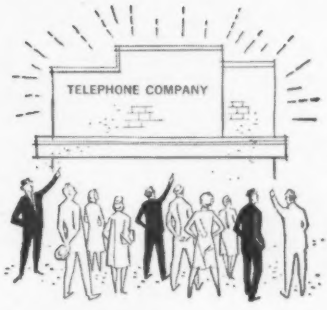
# ISN'T BETTER SERVICE + ADDED REVENUE IMPORTANT?

Operating Companies that have become a part of the nationwide DDD network have found that the "better service" offered the customer in Direct Distance Dialing has increased toll calling.

This increase shows a positive subscriber reaction to the convenience of DDD. While the increase in toll calls is welcome and important, it is most significant that the "public image" of the Operating Company is distinctly improved by this evidence of the Company's policy of modernizing telephone service.

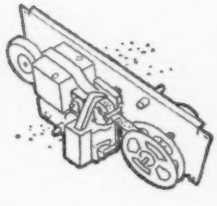


Much more tangible evidence of the benefits derived from installation of North Electric AuTollizer® equipment is reflected in the balance sheet.

North Electric Premium AuTollizer handles all classes of toll calls, enables the Company to handle substantially more toll traffic without adding expensive toll positions and manning them at more expense.

Most important of all, North Electric Premium AuTollizer can do all this for you and pay for itself in from three to five years!

Isn't it time you sat down with your North Electric field engineer to find just how you can benefit by installing North Electric Premium AuTollizer now? He'll be glad to help you because service to the Operating Company is the primary aim of ...



*THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY*

***NORTH ELECTRIC COMPANY***

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No. 5 in a series of factual presentations on North Electric Premium AuTollizer.

Let our "Revenue Men" show you

# THE EXTRAS THAT GO WITH INCREASED SALES!

Take a man like

**Mel Hauser**

Mel is one of our "Revenue Men" in San Antonio, Texas.

His sales savvy covers a wide range—real Texas-sized. Mel started his business career with an electrical company, packing in seven years' experience. Then, seven months before Pearl Harbor, he joined the U. S. Army.

Immediately after the war, he went back to work in sales — first with a specialty company, then in the insurance business.

In 1947, Mel joined General Telephone Directory Company as a sales representative in our San Antonio unit. Later he went to Texarkana as senior salesman, and became Sales Supervisor of the Texarkana unit in 1952. He returned to the San Antonio unit as Sales Supervisor in 1954.

Mel and his wife have two lovely teenage daughters.

Men like Mel Hauser are typical of the "Revenue Men" who work for General Telephone Directory Company and for you. And they all have one thing in common—they are always an asset to any community.

You get more than extra sales when you put one of our "Revenue Men" to work on your directory.

His manners, his methods will be a positive credit to your company. He'll be welcomed by your advertisers.

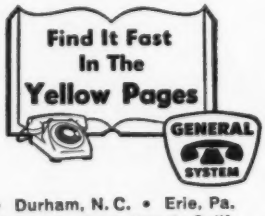
He'll work together with you to produce a book you can be proud of. A directory with complete Yellow Pages service—showing the public where to go for all kinds of purchases, rentals and services. A directory with maximum accuracy, maximum revenue.

And you won't have a worry in the world. Selling, publishing and printing are all done to perfection as part of our Complete Directory Service Plan.

Want to know more about it? A phone call or letter to our nearest office will bring a representative on the double.

## GENERAL TELEPHONE DIRECTORY COMPANY

1800 Oakton Boulevard
Des Plaines, Illinois
VAnderbilt 7-6111

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